[Report of the Medical Officer of Health for Strand District, London].

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ANNUAL REPORT

ON THE

STATISTICS

AND

SANITARY CONDITION

RELATING TO

STRAND DISTRICT, LONDON,

FOR THE YEAR

1898.

BY

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D.P.H. Camb., F.R.S. Ed.

MEDICAL OFFICER OF HEALTH.

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TO THE CHAIRMAN AND MEMBERS OF THE BOARD OF WORKS FOR THE STRAND DISTRICT.

GENTLEMEN,

I have the honour to submit to you my Annual Report on the Health and Sanitary Condition of the Strand District during the year 1898. It contains the Statistical Tables required by the Local Government Board, and other tables from which an idea may be formed of the position the District occupies from a health point of view, as compared with London as a whole and its various groups of districts.

Special attention is drawn to the question of the prevention of Consumption of the Lungs and other forms of Tuberculosis; to the importance of and necessity for greater care being exercised in regard to the places where food is prepared, stored or sold, with special reference to the large number of restaurants of various kinds in this District; to the methods adopted for the disinfection of rooms after infectious disease, &c.

The work done in connection with the Clare Market Scheme under the "Housing of the Working Classes Act" is detailed, and attention directed to the great difficulty which the persons displaced have in finding house room.

A large amount of good work has been performed during the year by the Officials of the Sanitary Staff, who have discharged their often difficult duties to my entire satisfaction.

I am, Gentlemen,

Your obedient Servant,

FRANCIS J. ALLAN,

Medical Officer of Health.

HEALTH DEPARTMENT,

5, TAVISTOCK STREET, W.C.

15*th February*, 1899.

SUMMARY OF STATISTICS.

AREA OF THE STRAND DISTRICT (exclusive of water) :—			
Strand portion... ...	113 acres		
St. Anne's „ ...	53 „		
		166 acres.	
POPULATION, estimated to the middle of 1898 :—			
Strand portion... ...	12,250		
St. Anne's „	12,150		
		24,400	
BIRTH-RATE...		21·14 per 1,000	
DEATH-RATE		21·43 „	
DEATH-RATE, multiplied by "factor for correction," according to age and sex in the population (1·11857) ...		23·97 „	
STRAND PORTION :—			
Birth-rate		19·59 per 1,000	
Death-rate		25·94 „	
ST. ANNE'S PORTION :—			
Birth-rate		22·63 „	
Death-rate		16·87 „	

BIRTH-RATE of England and Wales	29·5	„
Do. average of 10 years, 1888-97	30·5	„
BIRTH-RATE of London	29·4	„
Do. average of 10 years, 1888-97	30·9	„
DEATH-RATE of England and Wales	17·6	„
Do. average of 10 years, 1888-97	18·4	„
DEATH-RATE of London	18·3	„
Do. average of 10 years, 1888-97	19·3	„

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH

OF THE

STRAND DISTRICT, LONDON.

Population.

From the changes which are taking place in this District, it is impossible to determine with accuracy the figures which best represent the population of the District. The estimate of the Registrar-General, based upon the rate of decrease in the period between the last two census years, is, for the year 1898, 23,552; but to this figure there must be added those persons who are resident in the various Poor-Law establishments, and who add considerably to the death rate of the District. It is known that as many as 340 persons have been displaced during the year from houses which have been closed, but the majority of these people have not left the District. Room has been found not only for them, but also for persons from other districts. This has been accomplished by the departure to other parishes of families occupying several rooms each. These rooms have then been occupied by a class who can only afford the rent of one, or at

most, two rooms. It will be noticed also (Table III.) that there is little alteration in the total number of deaths for 1898, as compared with the average of the previous four years. In the absence of any epidemic, this can only be due to the population remaining fairly constant, or if it be reduced in numbers, to the substitution of less healthy persons. The births are fewer, but the birth rate for all London was below the average. From these considerations I conclude that the population in St. Anne's parish has undergone little change, and that in the Strand sub-district the population in the neighbourhood of Clare Market is undergoing degenerative changes. The population for 1898 may be regarded as one of 24,400 persons (12,250 for the Strand portion of the District, 12,150 for St. Anne's parish).

Births.

The total number of births registered in the District was 498. This has to be corrected by the addition of 14 births in Poland Street Workhouse, and 7 in Edmonton Workhouse, while 3 births in Bear-yard Workhouse have to be placed to the credit of St. Martin-in-the-Fields parish, leaving a total of 516 births. The birth rate is thus 21·14 per 1,000 inhabitants, as against 23·69 in 1897. The birth rate in London for 1898 was 29·5 per 1,000; the average of the previous seven years was 30·06.

Table I. shewing the corrected Number of Births (Male and Female) occurring in the Strand District, and each of its Sub-Districts, in the Year ending December 31st, 1898.

	Male.	Female.	Total.	Rate per 1,000 of Population in 1898.	Average Rate per 1,000 in the 7 years 1891–97.
1. St. Anne's Sub-District... ...	130	145	275	22·63	25·35
2. Strand Sub-District	124	117	241	19·59	22·06
	254	262	516	21·14	23·72

TABLE II.

Births in the Strand District in each of the ten years, 1889-98.

Year.	Strand District.	St Anne Sub-District	Strand Sub-District.
1889	678	381	297
1890	500	321	239
1891	640	334	306
1892	590	310	280
1893	607	330	277
1894	556	288	268
1895	618	324	294
1896	578	292	286
1897	580	314	266
1898	516	275	241

Deaths.

The total number of deaths, after correction,* which were registered as properly belonging to this District, during the year was 523. This is quite up to the average number recorded in the preceding four years, as shown in Table III.

Parish.	1894.	1895.	1896.	1897.	1898.
St. Anne, Soho ...	202	203	231	185	205
St Clement Danes ...	201	254	216	220	244
St. Mary-le-Strand ...	49	42	245	34	47
St. Paul, Covent Garden	33	37	38	40	23
Precinct of the Savoy	2	8	3	5	2
Liberty of the Rolls ...	6	7	4	6	2
Strand District ...	493	551	537	490	523

* The correction above referred to consists in *omitting* all deaths which took place in hospitals and kindred institutions within this district of persons not properly belonging to it; and, on the other hand, of *including* every death of such of its inhabitants as has occurred in hospitals, infirmaries, lunatic asylums, &c. throughout the Metropolis generally, and also those of paupers belonging to the several parishes of which the district is constituted, which have happened in the workhouses of the Strand and Westminster Unions respectively.

Upon the basis of the estimated population already referred to, the death-rate for 1898 is 21·43 per thousand persons as compared with 23·20 per thousand, the average rate for the preceding seven years. The death-rates in the four quarters were as follows :—

	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.
London ...	21·3	16·0	17·5	16·7
Strand ...	24·75	21·80	20·49	18·68

The London rate for the year was 18·3, being 0·9 per 1,000 below the average of the preceding seven years.

TABLE IV.

London and Strand Death Rates for the year ending 31st December, 1898, compared with the average rates for the seven years, 1891-1897.

Districts.	Annual rate per 1,000 Persons Living.					
	Total Deaths		Principal Zymotic Diseases.		Deaths under One Year of Age per 1,000 Births.	
	Average of 7 years.	1898.	Average of 7 years.	1898.	Average of 7 years. 1891-97.	1898.
London	19·28	18·3	2·73	2·77	157	166
Strand	23·20	21·43	2·44	1·84	186	166
Sub-Districts :						
St. Anne... ...	19·02	16·87	2·23	1·40	172	141
Strand	27·02	25·94	2·67	2·29	206	195

TABLE V.

Death Rates in the Groups of Metropolitan Districts in 1898, compared with those in the Strand.

Districts.	ANNUAL RATE PER 1,000 PERSONS LIVING.										
	All Causes.	Deaths from									Deaths under 1 year to 1,000 Births
		Principal Zymotic Diseases.	Small-Pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping Cough.	Fever.	Diarrhœa.	Phthisis.	
London ..	18·3	2·77	0·00	0·68	0·13	0·39	0·48	0·13	0·97	1·72	166
West ..	17·0	2 50	0·00	0·76	0·15	0·31	0·33	0·12	0·82	1·52	169
North ..	16·9	2·48	—	0·68	0·12	0·36	0·41	0·14	0·77	1·54	153
Central	22·1	2·80	—	0·76	0·15	0·44	0·36	0·12	0·97	2·66	170
East ..	21·7	3·60	—	0·86	0·11	0·44	0·75	0·14	1·29	2·06	181
South ..	17·7	2·75	—	0·56	0·13	0·42	0·49	0·11	1·03	1·66	164
Strand ..	21·43	1·84	—	0·53	0·08	0·16	0·16	0·12	0·77	3·32	166
Sub-Dists.											
St. Anne	16·87	1·40	—	0·41	0·08	0·24	—	0·08	0·57	2·47	141
Strand ..	25 94	2·29	—	0·65	0·08	0·08	0 32	0·16	0·98	4 16	195

NOTE.—Where the deaths under any heading are too few to express as a rate per 1,000 within two places of decimals, 0·00 is inserted; where no deaths have occurred, it is expressed thus —.

The Strand District forms one of the Central Group.

Appended to this Report (pp. 46-9) are Tables A and B required by the Local Government Board, together with Tables showing the causes of death in the Strand District, and in each of its Sub-Districts at various groups of ages, and distinguishing males and females.

From these Tables and from Table VI. it may be seen that 539 deaths occurred in the District; 236 of these were of persons who did not belong thereto, and 220 persons belonging to the District died outside its bounds. 162 inhabitants of the District died in Poor Law Institutions, 14 in Lunatic Asylums, 4 in Fever Hospitals and 84 in General and Special Hospitals; thus 50·4 per cent. of the deaths of residents occurred in Public Institutions (40·8 in St. Anne, 57·2 in Strand Sub-District); 28·9 per cent. of the deaths in all London were under similar circumstances.

TABLE VI.

Deaths in the Strand District, 1898. Showing Locality at time of Death.

Registration Sub-District.	Sub-Districts.		Work-houses and Infirm-aries.		General and Special Hospitals.		Fever Hospitals.		Lunatic Asylums.		Totals.		
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males	Females.	Males and Females.
St. Anne Soho	61	62	22	11	32	11	2	2	1	1	118	87	205
Strand	55	81	66	63	24	17	—	—	4	8	149	169	318
Strand District	116	143	88	74	56	28	2	2	5	9	267	256	523

Males died at the rate of 21·7 per 1,000; *Females* at the rate of 21·3 per 1,000.

Deaths under One year of age.—86 infants died in 1898; the average number in the preceding four years being 100.

Of the 86 infantile deaths, 18 were those of children who died soon after birth from debility, malformations, &c. The distribution of such deaths and the causes thereof are set out in Table VII. Thirteen of these infants were illegitimate.

TABLE VII.

	St. Anne's Sub-District.	Strand Sub-District.	The Strand District.
Debility at Birth, &c.	10	8	18
Measles	2	1	3
Whooping Cough	—	2	2
Diarrhœa	5	10	15
Tubercular Disease	2	7	9
Syphilis	2	—	2
Convulsions and other Nervous Diseases...	3	7	10
Diseases of Respiratory System ...	10	8	18
,, ,, Digestive ,, ...	3	2	5
Marasmus	—	2	2
Suffocation in bed with Parents ...	2	—	2
	39	47	86

Causes of Death.—As in former years, deaths from diseases due to Tubercle (phthisis, scrofula, &c.), and from other diseases affecting the Respiratory System have occupied a prominent place.

TABLE VIII.

Death Rates from Groups of Diseases per 1,000 persons living in 1898.

Diseases.	London.	Strand District.	St. Anne's Sub-District.	Strand Sub-District.
Principal Zymotic ...	2·77	1·84	1·40	2·29
Tubercular...	2·48	4·22	2·89	5·57
Respiratory	3·27	4·67	3·47	5·90
Nervous	1·80	1·90	1·16	2·62
Heart and Bloodvessels ...	1·51	2·29	1·23	2·37
Constitutional	1·35	1·22	0·82	1·63
Digestive System	1·33	1·38	1·48	1·31
Debility at Birth	0·73	0·73	0·82	0·65
Old Age	0·56	0·98	0·74	1·22
Urinary Organs	0 53	0·56	0·33	0·82
Violence	0·78	0·56	0·82	0·32
Dietic	0·16	0·48	0·33	0·49
Septic	0·09	—	—	—
Other Causes	0·95	0·61	0·38	0·75
All Causes	18·3	21·43	16·87	25·94

For many years the medical officer of health has been allowed to do battle against *tuberculosis* almost single-handed; but there are now signs that not only the medical profession, but the general public also, are awaking to an appreciation of the facts, and with such assistance tuberculosis should be banished from among us.

To do this however requires the co-operation of every member of the community. It is too often thought by the public that matters affecting the general well-being of the people at large should be left entirely to those who are elected as representatives on Sanitary Authorities and to their officers, but it is no less the duty of everyone to bear their share in the work of removing those conditions which promote the development and spread of disease.

It is now clearly recognised that tubercular disease is conveyed to the young by means of milk from affected cows, and that tubercular meat is also an agent in disseminating the disease. Samples of milk coming into Manchester and Liverpool from the country have been examined and 16 per cent. of them have been found to contain the tubercular organism, showing the need of stricter supervision of the places where the cows are kept. The one thing necessary to prevent consumption whether it be in man or in animals is pure air and plenty of it. Wherever conditions exist, that shut out air and light, there the tubercular organism flourishes whether it be in the dwelling, the workshop, or the cowshed. The high mortality from this class of disease which characterises the central parishes of London, has been referred to by me in former reports, and until better houses are provided for the very poor, and congested districts are opened up so as to remove what may be fitly termed "hot beds" of the disease, little can be done to check it.

Short of the removal of the conditions favourable to tuberculosis, the treatment of cases at an early stage in the disease is of the greatest importance as affording the sufferer a means of entirely recovering. Once the disease has reached an advanced stage, cure is almost hopeless, and the matter the patient coughs up from his lungs teems with germs which may be the cause of others being affected; but in the early stage of the disease, cure can be effected if the patient is taken from his unhealthy surroundings and placed under suitable conditions. The rich can secure these benefits readily, but the poorer classes cannot do so, and must often struggle on at their work as long as they possibly can in order to support themselves and those depending upon them. The provision of Sanatoria for those who cannot help themselves or who can pay but a small contribution towards expenses, should be provided either by the benevolent or by Local Authorities.

In this District, even after deducting the deaths of persons giving Common Lodging Houses as their address, the mortality is above the average, and there is little doubt but that had these people had the advantage of open air treatment in the early stage of the disease, they would be now useful members of the community. In every instance where a death occurs the house is visited, the offer made to disinfect and where necessary, notices issued for cleansing, whitewashing and the removal of insanitary conditions. Samples of milk to the number of 20, coming into the District from the country have been examined, but all have been found free from the tubercle bacilli. The schemes now in hand, together with those proposed to be undertaken for re-modelling and opening up the congested neighbourhood of Clare Market will doubtless bring considerable improvement in their train.

A leaflet containing information as to the cause of Consumption and pointing out the measures which should be adopted with the view of preventing the spread of the disease has been circulated by your Board throughout the District A copy of the circular will be found in the Appendix to this Report.

Notifiable Infectious Diseases.

120 certificates were received in 1897, relating to 115 cases of infectious disease. The amount paid for certificates during the year was £11. 5s., which is refunded to this Board by the Metropolitan Asylums Board.

TABLE IX.

Cases notified per 1,000 total population in 1898.

Disease.	London.	Strand.	St. Anne Sub-District.	Strand Sub-District.
Smallpox	0·00	—	—	—
Scarlet Fever	3·74	2·00	2·59	1·25
Diphtheria & Membranous Croup	2·63	2·07	3·39	0·60
Typhus Fever	0·00	—	—	—
Enteric Fever	0·67	0·37	0·40	0·34
Continued ,, ...	0·01	—	—	—
Relapsing ,, ...	—	—	—	—
Puerperal ,, ...	0·05	—	—	—
Cholera	0·00	—	—	—
Erysipelas	1·15	0·46	0·56	0·34
Total...	8·28	4·90	6·95	2·54

The proportion of notifications to population is shown in Table IX. The average number of notifications for the preceding six years was, for London 11·29, and for the Strand 7·91 per 1,000 of population. There was thus a decrease both in London and in the Strand District in the year 1898.

During 1898, no difficulty was experienced in obtaining admission of patients to hospital from the Strand District. 80 per cent. of the Scarlet Fever; 93 per cent. of the Diphtheria; and 55 per cent. of the Enteric Fever cases were so treated.

TABLE X.

Infectious Diseases notified, 1890—1898.

In London.

Year.	Small Pox.	Scarlet Fever.	Diphtheria and Croup.	Enteric Fever.	Typhus Fever.	Other Continued Fevers.	Puerperal Fever.	Erysipelas	Cholera.	Relapsing Fever.	Totals.
1890	60	15,330	5,420	2,877	35	237	206	4,598	25	7	29,795
1891	114	11,398	6,412	3,372	27	152	221	4,764	23	39	26,552
1892	423	27,096	8,356	2,465	20	147	347	6,934	54	7	45,849
1893	2,813	36,901	13,694	3,663	22	205	397	9,700	86	4	67,485
1894	1,192	18,440	11,190	3,360	21	162	253	6,080	21	2	40,925
1895	978	19,757	11,223	3,506	14	105	236	5,660	29	3	41,511
1896	304	25,676	13,941	3,200	6	103	279	6,438	13	3	49,963
1897	105	22,876	13,199	3,178	4	65	264	5,800	38	1	45,465
1898	35	16,917	11,871	3,032	17	55	250	5,180	23	—	37,380
In the Strand District.											
1890	—	60	10	13	—	—	—	10	—	—	93
1891	—	33	13	19	—	1	1	12	—	—	79
1892	7	111	33	12	—	—	1	22	—	—	186
1893	30	143	79	11	—	—	1	22	—	—	286
1894	5	52	30	15	—	1	—	11	—	—	114
1895	5	116	36	24	—	—	—	17	—	—	198
1896	—	130	36	9	—	—	1	11	—	—	187
1897	8	122	41	18	—	—	—	17	—	—	206
1898	—	45	50	9	—	—	—	11	—	—	115

Scarlet Fever.—There were 45 cases in 1898, as compared with 122 in 1897 and 130 in 1896. There were 2 deaths.

The London case-rate per 1,000 persons living was 3·74 in 1898 (5·33 being the average of the seven years, 1891-97); the

case-mortality was 3·44 per cent. (4·30 being the average). In the Strand District the case-mortality was 4·11 per cent., in St. Anne's Sub-District 3·1 per cent. and in the Strand Sub-District 7·1.

TABLE XI.

Scarlet Fever, Diphtheria and Membranous Croup cases and deaths in age periods. Strand District, 1898.

	0-1 yrs.	1-5 yrs.	5-10 yrs.	10-15 yrs.	15-20 yrs.	20-30 yrs.	30-50 yrs.	Total.
Scarlet Fever *Cases*	—	19	16	3	5	2	—	45
Deaths	—	2	—	—	—	—	—	2
Diphtheria and Membranous Croup *Cases*	—	12	18	14	2	1	3	50
Deaths	—	2	2	—	—	—	—	4

Diphtheria and Membranous Croup.—The notifications of this disease in London were at the rate of 2·63 per 1,000 inhabitants, as compared with 2·89 in 1897, but were above the average (2·6) of the seven years 1891-97. The rate for this District was 2·07 per 1,000 inhabitants, having been 1·7 in 1897. The death rate for London per 100 cases was 14·8 ; for this District, 8·00 ; for the Sub-District of St. Anne, Soho, 7·14 ; and for the Strand Sub-District 14·28 per cent.

Had it not been for an outbreak of this disease in a Home in St. Anne's there would have been fewer cases to record this year than in any recent year. There were in all forty-nine cases notified and one case notified as scarlet fever eventually proved to be diphtheria.

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 23, 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 22, 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 membrane. (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 twenty-seven throats had the diphtheria bacilli therein more or less plentifully, many yielding pure cultures of typical bacilli. In six instances the result was indefinite, and in fourteen 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 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 sixty children, nine only never gave evidence of infection, fourteen were in hospital,

leaving thirty-four children at home in addition to the first three returned from hospital. As time went on, the organisms in these thirty-seven throats became less and less typical in form (although some remained typical for a considerable time), and by June 15 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 co-incident 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.

This outbreak carries with it a number of instructive lessons. It shows the great assistance which may be derived from bacteriological examinations of the throats of persons who have had diphtheria, who may be suspected to have it, or who may have been exposed to the infection. It shows very clearly that a great many persons may be in an infective condition without exhibiting any symptoms, or with symptoms which may be readily taken for a simple sore throat. It shows the necessity for much greater care being taken than is at present generally done to prevent persons recovering from the disease mixing with others before the throat can be shewn to be free from all danger to others. The susceptibility of children at school age to diphtheria is well recognised, and it is evident that the chances of infection may be introduced into a school by children coming from an affected house or family, and this fact goes to show the fallacy of the argument

---

* The throats were found to be free from infection—

In	12	instances	in	12 days
In	22	,,	,,	28 ,,
In	1	,,	,,	44 ,,
In	2	,,	,,	101 ,,

from the date on which their presence was first recognised.

of those who contend that school attendance does not play an important part in the spread of this complaint because the teachers have not been able to detect any definite case of diphtheria. More supervision is necessary in regard to these matters in schools and if this disease is to be prevented from finding a permanent home in London, as it has done in many cities on the Continent, it is necessary that no person in an affected house should be allowed to mix with those outside it until their throats can be shown to be free from the specific bacillus; that on the occurrence of a case in connection with any school examination, the Medical Officer should have power to examine the children in the school; that a supply of diphtheria antitoxin should be available for protecting* persons who have been exposed to infection.

I have had some correspondence during the past year with the Metropolitan Asylums Board with regard to cases which have been suspected of being still in an infectious state when sent home from hospital, or of carrying infection with them, and with the view of making prompt enquiry into such cases, that Board has appointed a gentleman to conduct investigations on their behalf during the six months commencing on the 1st October last. In the only case which has occurred since then I was not advised of the return home of the patient until such a period had elapsed as prevented definite results being obtained. It is extremely desirable that the Sanitary Authority should be notified by the Asylums Board when patients are about to be discharged.

The Asylums Board have arranged for the distribution of antitoxin through medical officers of health in the event of their being unable to find accommodation in their hospitals for any case.

Mr. Cribb, the bacteriologist appointed by your Board, reports that during the year 1898 he has examined 168 specimens taken from the throats of persons suspected of suffering from diphtheria, or desirous of knowing that they were free from infection after

* Experience has shewn that an injection of about half the ordinary dose of antitoxin, will protect a person from diphtheria for a period of 3 or 4 weeks at the least, probably in many instances for a longer period. The protection given is believed to be equal to that conferred by an attack of diphtheria.

having been exposed thereto. In 67 instances he found the diphtheria bacillus present, in 9 the result was doubtful, and in 92 the organism was not found. Since I advocated the establishment of laboratories whereby bacteriology could be utilised as an aid to diagnosis (Ann. Report, 1893), many authorities in London and the provinces have adopted the method in connection with diphtheria, typhoid fever and tuberculosis, and the London County Council are considering the establishment of such a laboratory for London. As a result of the experience gained in this District, your Board on being asked by the Council for an opinion on the subject, replied that they were in favour of a central laboratory, but they considered it should be supplemented by district laboratories (not necessarily corresponding with existing local sanitary areas), so that no time should be lost in transmitting material for examination and in obtaining a report.

Enteric Fever.—Nine cases of this disease were notified during 1898, as against 17 in the preceding year. Of these one gave an address in this district, but had not resided there and no other definite address could be obtained, two were of persons who had just returned from the country; in two instances the disease is believed to have been acquired through eating shellfish; of the remaining cases one was a hospital attendant and doubtless took the infection from another case, two worked in other parishes, one at a ragstore and the other as a scavenger, and in one case no source of infection could be discovered, except that the drainage of the house was very defective. Three of the cases proved fatal, one being the first mentioned above. The cases in London were fewer in number than in any year since 1892.

Smallpox and Vaccination.—No cases of smallpox occurred in this District in 1898. During that year Parliament passed an Act enabling persons having "conscientious objections" to claim exemption from vaccination for their children. Up to that period about 20 per cent. of the surviving children throughout the country were escaping vaccination; since this Act came into force there has been a rush in a few districts to obtain exemption certificates, but that seems to have subsided, and the general

public appears to have got over the excitement which was worked up by the few enthusiasts to please whom the Act was passed. Even in some towns where exemption claims have been most numerous, there has been a marked increase in the number of children vaccinated. Fortunately, the country has been fairly free from smallpox, but should an outbreak occur, epidemics may be widespread, and measures of a stringent character will have to be resorted to by Sanitary Authorities to enable them to cope with the disease.

I am indebted to Mr. J. H. Penfold and Mr. W. C. Hasted, Vaccination Officers respectively of Westminster Union and Strand Union, for the subjoined details relating to the performance of Vaccination in those parts of the above Unions included in the Strand District for the year 1897.

1897.	Births.	Successfully Vaccinated.	Insusceptible.	Died Unvaccinated.	Vaccination Postponed.	Removed and Address not known.	Remaining.
St. Anne Sub-District	301	252	—	19	—	30	—
Strand Sub-District	270	183	—	34	2	38	13
Totals	571	435	—	53	2	68	13

The total number of certificates received from "conscientious objectors" to the end of 1898, amounted to eight, seven of these being from the Strand Sub-District and one from St. Anne's.

Principal Diseases of the Zymotic Class.

The Registrar-General classifies small-pox, scarlet fever, measles, diphtheria, whooping-cough, "fever" (typhus, enteric and continued), and diarrhœa under this heading. The Zymotic death-rates for London and the Strand District were 2·77 and 1·84 respectively per 1,000 of the population (See Tables IV., V. and VIII.) Compared with the averages in the ten preceding

years, the mortality in London from small-pox, diphtheria, whooping-cough, scarlet fever and "fever" was below the average, while that from measles and diarrhœa was above it.

Schools and Infectious Disease.—134 certificates have been forwarded to me by school teachers, relating to children who have been excluded from school on account of infectious disease existing in their homes. These certificates are furnished by Board School teachers under the code of Regulations laid down by the School Board for London for the guidance of Managers, Correspondents and Teachers. Regulation 148 (ii.) states that:—

"Any child showing symptoms of an infectious disease, or any "child coming from a house where an infectious disease exists, "must be sent home at once, and the Superintendent of Visitors "must be immediately informed of the case, in order that "enquiries 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.*

Board Schools and other primary schools also come under the Code of Regulations issued by the Lords of the Committee of the Privy Council on Education and under Article 101* a special grant may be obtained for children who have been excluded from school. The Article is as follows:—

"Where the Department are satisfied that by reason of a "notice of the Sanitary Authority, under Article 88, or any "provision of an Act of Parliament requiring the exclusion of "certain children or by reason of the exclusion under Medical "advice of children from infected houses, the average attendance "has been seriously diminished, and that, consequently, a loss of "annual grant would, but for this Article, be incurred, the "Department have power to make a special grant not exceeding "the amount of such loss, in addition to the ordinary grant."

In the end of 1897 I called the attention of the School Board to the fact that their regulation was not being observed in this District and since then the teachers of Charing Cross Road and Vere Street Schools have duly notified me. At that time measles was very prevalent in Soho and lists of children absent were furnished me by both St. Anne's and St. Patrick's Schools. During the year I have also received lists of the children excluded from St. Clement Danes School and have granted certificates relating thereto. The teachers of this school were also good enough to supply me with a list of 73 children who had been exposed to infection by reason of a case of Scarlet Fever being undetected in its early stages.

60 certificates related to Measles, 24 to Whooping Cough and 27 to Mumps which was very prevalent in the Strand portion of the District from September on to the end of 1898.

Measles became epidemic in London in September 1897. It appeared in Soho in October, and after affecting a large number of susceptible children there, spread after the Christmas holidays to the Strand part of the District. 13 deaths resulted, giving a death-rate per 1,000 of population of 0·53. The rate for London was 0·06 per 1,000 above the average (0·61) of the preceding ten years.

The question of including Measles under the head of "Dangerous and Infectious Disease," as defined for the purpose of the "Public Health (London) Act," came up before your Board for discussion in a new form. Hitherto it was sought by various Authorities to make measles a notifiable disease, but this did not receive general support. It is now stated that without making it notifiable, it yet may be placed among the diseases mentioned in the Act, with the view of giving Local Authorities power to proceed against persons who send their children to school suffering from measles, or otherwise fail to take reasonable steps to prevent spreading the disease. Your Board agreed that it was desirable to include measles for these objects.

Whooping Cough was prevalent in the District, especially in the Strand sub-district, from January to June, and caused four

deaths in the latter district. The death rate in London was 0·09 per 1,000 below the average (0·56) of the preceding 10 years.

Diarrhœal Disease.—17 deaths occurred from Acute or Infantile Diarrhœa, 7 of the deaths being in St. Anne, 10 in the Strand. In 1897 there were 21 deaths, in 1896, 22 deaths. Several deaths were registered as due to this cause, but on enquiry being made into the conditions, it was found that diarrhœa had been only a symptom of some other complaint. The 17 deaths mentioned above, refer to those which were found to be due to the definite form of complaint which is known variously as Epidemic Diarrhœa, Infantile Diarrhœa, Enteritis. Dr. Klein writing in the Report of the Local Government Board for 1897-98, describes an organism the bacillus enteritidis sporogenes, which he believes to be intimately concerned in the causation of infantile diarrhœa and English Cholera. This organism is especially abundant in animal excreta, and in matters contaminated therewith ; it is not obtainable from the bowel discharges of healthy persons or of patients suffering from ordinary casual diarrhœa. Milk is a specially favourable multiplying ground for this bacillus. Enquiry in various large centres has shown clearly that this complaint attacks young children who are bottle-fed, while those who are entirely breast-fed escape. This disease might be got rid of if greater care were taken to prevent contamination of the food supplied to young children. Were all milk sterilised by being boiled before being drunk, not only would the amount of diarrhœa be decreased but danger of tubercular disease (consumption of the bowels), and other complaints would also be removed *

It is also important when food has been cooked that it should not be exposed to the risk of contamination. This may occur in various ways, but chiefly by filth being carried on to the articles of food by wind in the form of dust, and by flies. If the surroundings of a house are dirty and polluted the material conveyed by these agencies will undoubtedly be of a deleterious

* Boiling milk, even for one or two minutes, effectually destroys any disease organisms it may contain. Children soon get used to the taste of boiled milk, but when they do not, the milk may be rendered harmless by placing it in a small tin saucepan, inside a larger one containing cold water, putting both on the fire together and boiling the water.

nature.* From the above remarks it will be gathered that it is equally important to have roads and streets free from all kinds of filth and dust. The thorough cleansing of the streets in this District shows that this requirement is duly appreciated by your Board. The method which has been adopted by your Board for many years of washing the streets and courts of the District is undoubtedly of the highest value, not only to those resident in the district but to the health of the many who have occasion to pass through it.

Disinfection.

During the twelve months ending 31st December, 1898, 96 premises were purified and cleansed after infectious disease, and 1,976 articles were disinfected in your Board's apparatus; 40 articles were burnt in your Destructor at the request of the owners. One of the cells at Bow Street Police Station was fumigated.

House Disinfection.—During the last two years I have been engaged in a series of experiments, with the view of determining whether any better method of disinfecting rooms, could, with advantage, be substituted for fumigation by burning sulphur, which has been suspected to be unreliable in its action, and I submitted a report on the subject during 1898, which is appended hereto. It was considered by your Health Committee, who recommended that fumigation by sulphur be discontinued as a routine practice, and that the more efficient and economical method of using formic aldehyde in gas or spray be substituted, which was agreed to by your Board. The necessary apparatus having been provided, these methods were adopted and have proved very useful and convenient in working. I have recently had some further experiments made with the assistance of Dr. J. Wilkinson, in connection with an apparatus for producing formic aldehyde in greater quantity than could be done with the alformant lamp. Our experiments, however, did not satisfy us that it was likely to be as effective as the method already adopted.

The Temporary Shelter for the reception of persons while their houses are being disinfected was not used for this purpose during 1898.

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* See also Pages 39–43 of this Report.

Cleansing of Persons Act.—There have been no applications.

Certificates of freedom from Infection have been granted during 1898 in respect of 19 houses, chiefly with regard to children who are being sent to the country by the Children's Country Holiday Fund. It would be well if other agencies, before sending children away, were to ascertain that there was no danger of conveying infection to the districts whither the children were to be sent. Through negligence in this respect, the infection of Scarlet Fever was conveyed to a house in one of the southern counties, where a resident of St. Anne's Parish was staying with her little girl, who became infected and eventually died. The Essex County Council, having had several outbreaks of Measles and Scarlet Fever introduced in this way, have asked the Local Government Board to include in any future Public Health Bill clauses requiring notification to the local authority of the intention of anyone to send children to the country in this way, and making the parent or guardian of any child so sent and developing an infectious ailment responsible, unless he can show that he was not only unaware that the child was so suffering, but had taken reasonable means to ascertain that such was not the case.

Mortuaries in the District.

During the year, the number of dead bodies received into the mortuaries in the Strand District were as follows:—

1898.	Total number of Bodies.	After Infectious Disease.	Post-mortem examinations made.
Strand Mortuary	53	—	20
St. Anne's ,, ...	18	—	16
Total	71	—	36

Sanitary Work.

The following list summarises the work carried out under the supervision of the Department during the year.

Number of visits paid by Sanitary Inspectors* ...	4,088
Preliminary notices served	376
Orders made by the Board ("Public Health London Act")	23

DWELLING HOUSES:—

Inspections*		883
Premises in which works have been carried out ...		374
Letters written		613
Overcrowding abated (by written notice)		19
Cleansed and Whitewashed	Throughout ...	24
	Partially ...	114
Ventilation improved, walls, ceilings and floors repaired		40
Roofs made water-tight		58

Water closets:—

Reconstructed and repaired	161
Additional provided	24
Water re-instated	20
Flushing apparatus repaired	20
Obstructions removed from	22
New pans and traps provided	23
Pans and traps cleansed	37

Drainage:—

New drains constructed	92
Drains repaired	22
Sink and lavatory waste pipes disconnected and trapped	98
Rain water pipes repaired	42
Obstructions removed from drains	16

Paving required or repaired:—

In yards	42
In basements	32

* Exclusive of the weekly inspection of Registered Houses.

Dust and dung removal :—

Sanitary bins provided*...	30
Offensive refuse removed from premises ...	44

Water supply :—

Cisterns repaired and cleansed	64
Re-instatement of water after being cut off by Water Company	6
Certificates granted under "Public Health (London) Act," Section 48	2

Under-ground rooms :—

Use prevented as separate dwellings	15

The stables and mews, 42 in number, have been regularly inspected, more particularly in regard to the periodical removal of manure.

During recent years peat has to a large extent superseded the use of straw as litter in stables. If peat which has become saturated with urine, &c., is stored for a day or two, certain chemical changes take place which renders the process of removal extremely offensive to those in the neighbourhood. The County Council suggested that restrictions should be placed as to the hours during which it may be removed. Your Board were of opinion that what was required to prevent nuisance was rather some method of collecting the refuse and removing it without disturbance. This can be effected readily by the refuse being placed at once on its removal from the stalls in suitably constructed waggons, which when full are taken away and empty ones substituted. In cases where stables are on the upper floors, a shoot can be provided.

There are no cowsheds or slaughter-houses in this district.

Smoke Consumption.—Smoke nuisances coming under Sub-section A, of Section 24 of the "Public Health Act," have been dealt with by your Surveyor; those under Sub-section B, have

*Under the Board's system of dust collection, fixed bins are gradually being disused and abolished.

had statutory notices served upon them through the Health Department. Orders made in regard to chimneys sending forth black smoke in such quantity as to be a nuisance, have in each case been complied with.

Considerable trouble was caused by the difficulty in obtaining smokeless coal during a large part of 1898 through a strike among the coal miners of Wales. It is apparently easier to use a smokeless coal than to so construct furnaces that they will consume the smoke arising therefrom, with the result that when this kind of coal is not to be had London has to suffer from a very great deal of nuisance. Several magistrates unfortunately by refusing to convict offenders contributed to the continuance of the evil.

Your Board had under consideration the growing nuisance caused by steamboats on the Thames failing to consume their own smoke, and a letter was sent to the Port Sanitary Authority (who are empowered to enforce the provisions of the Public Health Act relating to smoke consumption), urging that body to take immediate measures to remedy the nuisance.

Systematic inspection of houses has gone on regularly throughout the year as required by the Public Health Act. The houses so dealt with include those in Sardinia Street, Vere Street, Stanhope Street, Sheffield Street, Houghton Street, Denzell Street, Bear Yard, Twining Street, Little Chapel Street, Diadem Court, Hollen Street, Charing Cross Road, Bedford Street, Henrietta Street.

In the blocks of buildings adjoining the insanitary area now being dealt with are many houses which are in a condition unfit for habitation and which should be closed on the first opportunity. The difficulty however of obtaining sufficient accommodation until new buildings are erected and the growing tendency to overcrowding of persons upon sites and in houses unsuitable for letting in tenements would be further aggravated were these houses to be closed at once. By placing them on the register of houses let in lodgings they are kept under supervision. The proposed new street from Holborn to the Strand will remove these houses if it is carried out, but if it is not, they must be dealt with under the Housing of the Working Classes Act.

Closing orders were obtained in respect of two houses, and five houses were voluntarily closed by their owners after service of notice by your Board. In one case a summons was taken out for the illegal use of underground after notice, and a penalty of 40s. and costs was imposed.

Houses let in Lodgings.—Your Health Committee had under consideration a report of the County Council on the subject of the enforcement of the by-laws relating to houses let in lodgings and recommended the Board 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. In accordance with this recommendation your Board added thirty-four houses. On the 1st January, 1899, there were on the register ninety-five houses (fifty in St. Anne, forty-five in Strand). Three of these are at present closed. Those occupied contain 829 rooms and accommodate 1,708 persons.

Wilful Damage to Sanitary Conveniences.—It has frequently been brought to my notice that a certain class of tenants, when under notice to leave their rooms, wilfully stop up waterclosets, sinks, and drains, and then write to the County Council, or to your Board, complaining that the house is in a bad condition. Under the Public Health Act, any person destroying such works or apparatus, so that a nuisance is caused, or without proper authority, is liable on conviction, to a fine. Under another section, wilfully stopping up, or wilfully interfering with, or improperly using such conveniences, renders the person so acting liable to a penalty. The difficulty is, however, to obtain evidence sufficient to obtain a conviction; under these circumstances, notices were prepared setting forth the law on the subject, and owners of property let to this class of tenant, have been requested to place the notices in some situation where they could be seen readily by the tenants. This has been complied with in a number of instances, with apparently good results.

Housing of the Working Classes Act.—During 1898 the Council have been occupied in negotiating for the properties in the Clare Market area, and have acquired possession of a number

of them. I have pointed out to the Council, through the Medical Officer of the County, that certain houses were, in my opinion, unfit for habitation, and that many of the houses were in such condition that it would be necessary for the Council to have a staff of men to look after their sanitary condition daily. Up to the end of 1898, upwards of 50 houses have been closed by the action of the Council, or of your Board, displacing about 340 persons, but as I have already pointed out, the majority of these persons have not left the District. This has been ascertained by myself and by your Inspectors finding such persons in the course of inspection, and the Relieving Officer informs me that many of the displaced persons were in receipt of relief, and that they still reside in the district. The amount of vacant accommodation is very limited, and is being provided to a considerable extent by the migration from the neighbourhood, of families who were able to rent one or more floors. On their removal, a poorer class take possession of the rooms, one or two for each family. Under such circumstances, overcrowding must constantly take place, with deterioration of the property, which is entirely unsuited for the use to which it is now being put. A further number of houses are to be closed at the beginning of 1899, and it may be said that now no accommodation exists for persons who may be displaced hereafter, unless they avail themselves of the Workhouse, or remove to a considerable distance from the neighbourhood.

To meet this difficulty the Council have resolved to proceed at once with the erection of artisans' dwellings in the vicinity of the area. Three sites have been selected:—(*a*) On the north side of the new street between Catherine Street and Drury Lane, to accommodate 180 persons; (*b*) in Drury Lane, a little above Russell Street, for 360 persons; (*c*) the third site is near Woburn Place, and is to take 460 persons. The provision of these dwellings will necessitate a slight alteration in the original scheme, but it will leave the Clare Market area free for the erection of houses for the people who will eventually be displaced by the new street for which the Council is seeking power to make from

Holborn to the Strand. 3,030 persons will then be affected, and probably about 1,250 of them will have house room found for them in this district.

The Council are beginning to realise the necessity for providing house room for poor persons as well as for artisans in regular work. Buildings which they have erected in various parts of London have been so expensively constructed that the class of persons who originally lived on the site are unable to avail themselves of them on account of the high rent which must be charged. This difficulty is enhanced when the Council is obliged to make provision for persons displaced, on the site. Were the Council able to construct dwellings elsewhere, and at the same time give cheap travelling facilities at all hours, improvements might be effected at much less expense to the ratepayers, while the persons displaced might be housed under conditions which, besides being healthier than those under which they had been forced to exist, would at the same time be preferable to the people themselves, than the blocks of buildings to which the Council are necessarily restricted when building in central districts *

The difficulty of providing housing accommodation for persons of the poorer classes led your Board to pass a resolution expressing the opinion that District Boards and Vestries should have concurrent power with the London County Council to acquire sites and erect buildings under Part 3 of the "Housing of the Working Classes Act."

Appointment of Arbitrator.—On the 20th December, the Home Secretary made an order appointing Mr. Herbert Thomas Steward as the arbitrator to determine the compensation payable by the Council in respect of those claims which have not been settled by agreement under the Clare Market Scheme.

Subjoined are the death rates for the area on the population, as calculated to the middle of 1898. There were 102 deaths, 26 of them being due to consumption.

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*It has been stated that the cost of land for housing persons displaced by the proposed Holborn to the Strand street, will amount to £260 for each person, while within 1½ miles, it would be £9.

TABLE XIV.

	1898.	Average of previous 7 years
The Area	35·6	36·2
Sub-Area A	37·7	36·9
Sub-Area B	45·0	33·3
Sub-Area C	24·6	35·6

In some instances where persons die in public institutions, the addresses at which they resided previously to admission is not definitely known, but in this Table no deaths are included unless the persons had a definite address in the area.

Inhabited House Duty Exemption.—With a view to secure uniformity in granting of certificates for this object, the Metropolitan Branch of the Society of Medical Officers of Health recommend :—

1. That in no case should a Medical Officer of Health examine a house with a view to giving a certificate under these Acts until he is absolutely satisfied—as advised in the letter from the Local Government Board, dated the 15th August, 1892—that the house in question comes within the sections of the Acts.

2. That for a certificate under these Acts the following requirements should be complied with :—

(*a*) A definite minimum height and superficial area for living and sleeping rooms, as defined by "The London Building Act, 1894."

(*b*) A sufficient and available supply of water on each floor.

(*c*) At least one water closet, properly supplied with water, for every twelve occupants (or less) on each floor.

(*d*) The drainage of the premises to be in accordance with the regulations recognised by the Authority in whose jurisdiction the house is situated.

(*e*) Accommodation for clothes washing to be provided, sufficient for the number of persons inhabiting the house.

Extension of York Street.—In order that a road might be formed through the block of ground lying between Catherine Street and Drury Lane, it was necessary to deal with a plot of land known as the "Russell Court Playground," which was formerly a burial place belonging to St. Mary-le-Strand. The removal of the human remains contained therein was effected by the Necropolis Company, under the supervision of your Medical Officer of Health, and was effected with great care and without the occasion of nuisance of any kind. The piece of ground is stated to have been purchased from the Duke of Bedford in 1723, as an auxiliary burial ground to the then crowded portion of ground in connection with the church of St. Mary-le-Strand. Apparently at that time, or at some period anterior to that, it had formed part of the back yard and garden of a house which stood in the vicinity, for in the part of the ground nearest Catherine Street, vaults ran across it from north to south, and adjoining these, paved flooring was discovered at a depth of about 12 feet. A well, also, and a cesspool, extending down another 12 feet, were also found. The site had evidently been used as a shoot for refuse for a while, as layers of broken crockery ware, oyster shells, &c., were observed during the excavations. Probably also the burial ground extended originally further towards Cross Court, as bones were found beneath the yards and outhouses of the buildings which lately stood there. During the time this ground was used as a cemetery burials had been numerous. In the old records, the courts in St. Mary's Parish, which are now being dealt with under the Clare Market Scheme, contributed at least one death a week, and, with few exceptions, the burial took place in the "Green Ground." The area of the ground in which remains were discovered was about 462 square yards, and burials have taken place in every part of the ground; remains were found showing that the coffins must have been placed side by side and one above the other from a depth of 12 feet to within 2 feet or even less from the surface. Few burial grounds could be more overcrowded with bodies than this one was. Knight, writing of this place in "London" (Vol. IV. p. 163) says that in 1843, "20,000 bodies are

computed to have been interred within the last half century." If this estimate be correct then some 17,000 persons other than parishioners must have been buried there. This burial ground came to be surrounded by small houses which overlooked the ground and probably it was felt that this gave a certain amount of security against "resurrectionists" and would also prevent the horrible proceedings which took place in many London burial grounds (as was ascertained by a Committee of the House of Commons in 1842). This statement is borne out by the fact that although the ground was closed for burial in 1853 the remains of no less than 13,500 persons were removed for burial at Woking, and these were almost entirely the remains of adults although at least a half of the parishioners who were buried there were young children. Few people nowadays can realise the horrible conditions which obtained in regard to the disposal of the dead at the beginning of the present reign. There were at least six burial places in close proximity to the Strand, and that they are particularly described in the Committee's Report is doubtless due to the fact that Mr. W. A. Walker, F.R.C.S., of Drury Lane, did much to direct public attention to the state of affairs and took an active part in obtaining this reform.

The state in which this particular graveyard was, some little time before its closure, has been pictured so well by Dickens ("Bleak House" chapter XI.) that it may be well to quote him in order to show the alterations which have taken place in the interval. He describes it as a

"Hemmed-in churchyard, pestiferous and obscene, where "malignant diseases are communicated to the bodies of our dear "brothers and sisters who have not departed; while our dear "brothers and sisters who hang about official backstairs—would "to Heaven they *had* departed!—are very complacent and "agreeable. Into a beastly scrap of ground which a Turk would "reject as a savage abomination and a Caffre would shudder at, "they bring our dear brother here departed to receive Christian "Burial. With houses looking on, on every side, save where a "reeking little tunnel of a court gives access to the iron gate—

" with every villainy of life in action close on death, and every " poisonous element of death in action close on life—here they " lower our dear brother down a foot or two: here, sow him in " corruption, to be raised in corruption: an avenging ghost at " many a sick bedside: a shameful testimony to future ages how " civilisation and barbarism walked this boastful island together."

After its closure in 1853, its condition became even worse until in 1886, the Metropolitan Gardens Association after filling up the gaps caused by the sinking of the soil and removing the rubbish which had accumulated, covered it with asphalte and turned it into a playground for children.

A House Record.—I have for a long time been impressed with the necessity of having in the Health Department a system whereby a record of the sanitary history of each house could be kept in an accessible form. Under ordinary methods, information regarding any particular dwelling is scattered through a number of books, and Authorities have to depend to a large extent upon the memories of their officials, and if infectious diseases or deaths have occurred in a house, it requires considerable search through old papers to find record of them. In preparing the evidence in connection with the scheme under the Housing of the Working Classes Acts dealing with the insanitary area in the neighbourhood of Clare Market, much work was rendered necessary from this cause, and since then I have kept a street record of deaths, and this has gradually expanded to include a record of other matters connected with each house, but it was, at the best, only an index. In April last I explained to the Health Committee a scheme which your late Clerk (who took a great interest in the matter) and I devised, and the Committee approved of the same. We found subsequently, that a method similar had been adopted in 1894 by the Municipal Council of Paris, and had been found of the greatest service by all departments of the administration and by the general public.

The method adopted here is as follows:—Each house has an envelope inscribed with the name of the street, the number of the house, and a consecutive number corresponding with a number on a card index. Within each envelope are placed plans of

drainage, special reports, correspondence, copies of complaints, &c., relating to the particular house. Each enclosure bears a number corresponding to that on its envelope. The card index contains a list of the papers enclosed in the envelope, but besides, is a record of all deaths and infectious disease occurring in connection with each house, the number of people found occupying it at times of inspection, dates of complaints, of inspection, particulars of intimations and statutory notices served, a note of the occupations carried on and persons employed therein, dates of building, of re-building and of re-draining, and other matters affecting the sanitary condition of the house. The envelopes are stored in cases according to number. The cards, each of which bears a number corresponding to that of the envelope to which it refers, are kept in a couple of drawers arranged according to streets. They are thus easy of access, and the details may be promptly entered on the cards. To ensure this being properly carried out, it must be done daily and regularly. It is impossible to do this without the services of a clerk. A temporary arrangement was made whereby one of the junior clerks in the Clerk's office gave his spare time to the Health Department, but this arrangement has not proved satisfactory, and I trust that a clerk will be appointed specially to the department. There is, besides that described above, a considerable amount of clerical work which at present falls upon the Sanitary Officers and myself, and is a hindrance to the out-door work of these officers.

Workshops.

The inspection of workplaces is the special duty of Inspector Martinson, and the nature of the employments chiefly carried out in the District are set out in the list prepared by him of the work done under this heading during the year 1898. From the way in which dwellings and workplaces are united in the same building, it follows not infrequently, that the house as a whole has been inspected by Inspector Strutt, so that works of re-drainage and such like may be included in the general list rather than under that of "Workshops."

Number of inspections	694
„ visits	1,377
Letters written	81
Extra W.C. accommodation provided	1
Overcrowding abated	6
Premises cleansed	260
Ventilation improved	3
Number of outworkers	296
Premises notified to H.M. Inspector	16
„ „ from „	2
Complaints from Home Office	1

There are now on the Register 204 Workshops, containing 693 workrooms, in which 2,284 males and 868 females are employed. These numbers are exclusive of shops, offices and Covent Garden Market.

Bakehouses.—The bakehouses have been regularly inspected. The number in the District is now 27.

Laundries.—There are 18 in the District, and they have been inspected from time to time.

Printing Offices have increased during the year to 113.

Tailors' workshops, to the number of 82, are on the Register, but this is a constantly varying number, as those engaged in this class of work in a small way, frequently change their place of abode.

Outworkers.—Your Board had under consideration a communication from the Battersea Vestry, asking the views of the Board as to an interchange of information relative to the addresses of "outworkers" who, sometimes escape sanitary supervision in consequence of working in a district other than that in which the work is given out; this interchange of information having been suggested by the Factory Inspector of the Home Office.

It was resolved, that the Battersea Vestry be informed that the Board consider that advantage would accrue if the Half-Yearly Returns made to the Home Office were distributed by the

Factory Department amongst the several sanitary districts, and advise that the London County Council be asked to take action to attain this object.

Inspection and Analysis of Food.

The street markets have been inspected every day (including Sundays) and the following list shows the kind and quantity of the food-stuff which has been condemned during the year :—

Apples	10 bushels	Cabbages	45 bags
Bananas	220 crates	Cauliflowers	3 crates
Cherries	15 bushels	Madeira Beans	400 baskets
Currants, Red ..	16 ,,	Onions	3 cases
Grapes	11 cases	Potatoes	52 cwt.
Oranges	262 cases	Tomatoes	135 boxes
Pears	14 boxes		
Plums	8 bushels	Bacon	5 cwt.

This does not represent all the damaged food-stuffs disposed of by your Board, as much refuse fruit and vegetables are collected in Covent Garden Market in the special carts provided for the purpose.

The Acts relating to the sale of food and drugs have been systematically enforced throughout the District as in former years, under the supervision of your Health Committee, and from the report of your Board's Analyst it will be seen that a large and varied number of articles have been examined by him.

In 1897, on the initiative of your Board, a resolution was sent to the Local Government Board and County Council by 21 of the Sanitary Authorities of the Metropolis expressing the view that it was desirable that by-laws should be made, giving power to the Authorities to control places where food was prepared, stored, or sold, and to prevent the use of places unsuitable for the purpose. During the year some further communications were made to the Council on the subject and the matter was under the consideration of one of the Council's Committees. With the view of obtaining some information which might guide them, Dr. Hamer, one of the Assistant Medical Officers was directed to visit various districts.

He spent two mornings in this District and visited a number of restaurants, fried-fish shops, ice-cream shops, sausage makers, &c. The Committee have not yet reported.

Appended to this Report is a Map (prepared by Inspector Martinson) showing the number of places where food is sold in the Strand District. They are as follows :—

		Strand.	St. Anne's.
Number of	Restaurants and Coffee Houses	66	60
,,	Licensed Premises and Hotels	36	26
,,	Bakehouses	15	13
,,	Butchers and Fish Shops ...	15	10
,,	Dairies and Milkshops ...	9	16

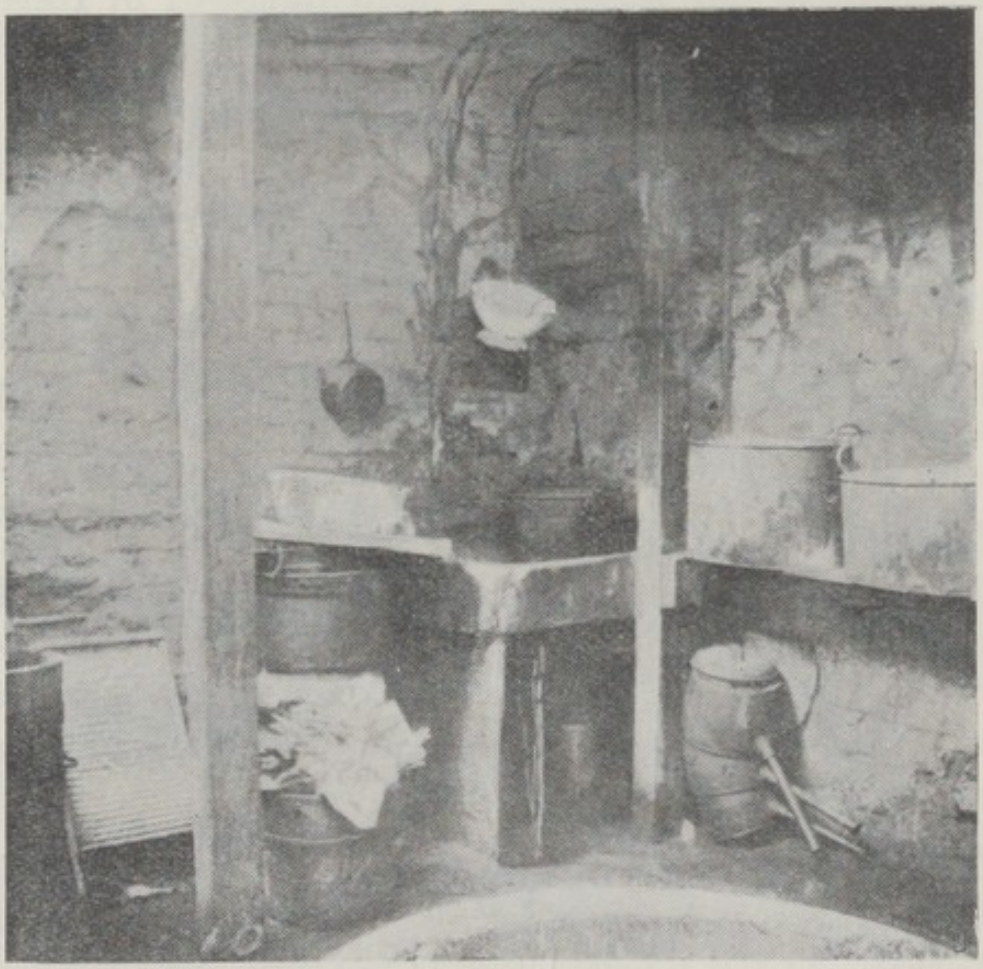
Ice-Cream Manufacture :—Especially deserving of attention are the conditions under which ice-creams are prepared and kept before and during sale. Several samples of custard and cream-ices have been taken during the year. One shop may be taken as typical of the establishments where cheap ices are manufactured and sold.

The ground-floor consists of a shop and a back room, where all the cooking is done, this latter room being also the living room. In the shop—11 feet 6 inches long, 11 feet wide, and 8 feet high—the counter extends from end to end. Behind the counter are kept the ices in their freezing-pails. A door leads from the shop into the kitchen, which is 12 feet 3 inches long, 11 feet wide, and 8 feet high, and has a good-sized window looking on to the yard behind. Upstairs there are four bedrooms.

Eight adults and several young children occupy the premises, the kitchen being the common living room.

The yard, shown in the accompanying photograph, adjoins the kitchen, and is 8 feet 3 inches long, by 11 feet wide. In one corner is the water-closet, and in the opposite corner a sink draining into a gully-trap. From the sink to near the kitchen door is a shelf, on which a number of unclean kitchen utensils

were found, and under the shelf an uncovered dust-bin. A partial roof, 7 feet from the ground, extends over the shelf and sink, the rest of the yard being open.



From a Photograph showing custard-pans cooling on shelf between back-door of Kitchen and Sink. The yard is practically both Scullery and Wash-house. The W.C. (not shown) is to the left of the Copper.

The method of manufacture of the ices has an important bearing from a public health point of view. They are made as follows :—for each quart of milk ½ lb. of sugar, 2 to 3 eggs, and 1 oz. of cornflour are required. The sugar is dissolved in the milk by boiling; the eggs are well beaten and mixed with the cornflour; the boiling milk is then added to the mixture of eggs and cornflour. A large pan, like an ordinary fish-kettle is used, and the mixture is set to cool in the uncovered pan outside the house, in whatever place may be conveniently vacant, usually on the floor of the yard, or on a shelf, but some times the water-closet is used as a larder.

Ice-creams are made differently to the custard ices; fresh cream is flavoured, and frozen.

On the 24th of August the following samples were obtained, viz.—

From street-barrow A, custard-ice A.
„ „ A, washing-water A.
From low-class shop B, custard-ice B.
„ „ B, custard B (while cooling).
From street-barrow D, washing-water D.
From good-class shop C, cream-ice C.

Each sample was taken in a sterilized glass-stoppered jar, under the direction of Dr. J. Wilkinson (of the Bacteriological Laboratory, King's College), who kindly reported upon them.

A general microscopic examination revealed no foreign matter in the ices or custard beyond some indefinite undetermined debris. Growth on gelatine plates and on other media showed that the ices contained per cubic centimetre from a quarter of a million to over one and a half million organisms, and some 18 varieties of them were isolated and identified. In the water in which the glasses and spoons were washed the number was so numerous that they could not be counted.

Dr. Wilkinson points out that as raw milk may contain from three to four million micro-organisms per cubic centimetre, and raw cream may have as many as ten million, a cream-ice, without further contamination, may contain an enormous number of organisms derived from the original milk or cream which are not killed by freezing. With custard-ices, however, the case is different, as the boiling to which the milk is subjected destroys the organisms; thus the sample of custard taken while it was cooling showed only 500 organisms, while some, after it had cooled and been frozen, taken from the same shop, contained 1,250,000 per cubic centimetre.

Such contamination is easily preventable. It may arise from any of the following sources:—

1. Dirty vessels used in the preparation of the ices; the pans are stated to be generally washed in cold water, almost never scalded out.

2. The positions in which the custards are placed to cool, close to dirty pans, near refuse-bins, in dirty yards or in kitchens, small, ill-ventilated, and far from clean, with a number of young children constantly about, render it liable to contamination of all kinds, and is surely an unfitting preparation for a food intended for human consumption. The houses are not suitable for the manufacture of these custards. They have seldom proper accommodation for storing the custards ; the number of people inhabiting the houses is often excessive, and their habits far from clean. Ice-cream vendors informed Dr. Wilkinson that if the custard is covered over while standing to cool it sours. At the same time, it might be possible, by making a gauze covering to the custard-pans, to protect the custard to some extent.

3. Dirty ice in the freezing-pails (during freezing). When the inner vessel containing the custard is moved there is a possibility of some of the ice-water getting into the custard; possibly organisms may at times enter the custard-cans from this source.

4. During delivery to the customer, dust from the air and dirty washing-water.

The street-barrow ices are specially liable to receive organisms from dust, such as *B. subtilis* and *B. coli communis*. The washing-water may also be a fruitful source of contamination. The customer licks the ice out of a glass, the glass is washed and dried on a not over-clean towel, and filled again for the next customer. During these proceedings we have the possibility of organisms introduced on to the glass by one customer, being transferred to the water, towel and ice-pail, and thus, a supply of organisms is obtained for other customers.

It must be evident from the above report that proper control over this industry is urgently required. Custard-ices so contaminated are unfit for food ; but from the time required to examine them, it is difficult under the "Public Health Act" to proceed against the person selling them. It would be better to insist that this, as well as other foods, should be prepared under conditions which would reduce the risk of contamination to a minimum, while for ordinary ice-creams, sterilised milk and cream might be used.

It appears desirable that the Regulations as to dairies, cow-sheds and milkshops should be extended so as to include such places. I quote three of these Regulations which would be of much value if extended to other branches of industry dealing with food :—

"30. Every purveyor of milk, or person selling milk by "retail, shall not keep milk for sale in any place where it would "be liable to become infected or contaminated by gases or effluvia "arising from any sewers, drains, gullies, cesspools, or closets, "or by any offensive effluvia from putrid or offensive substances, "or by impure air, or by any offensive or deleterious gases or "substances.

"31. Every purveyor of milk, or person selling milk by "retail, shall only keep milk for sale in clean receptacles; and all "utensils used in connection with the keeping or sale of such "milk shall be at all times kept clean.

"32. Every purveyor of milk, or person selling milk by "retail, shall at all times employ such means, and adopt such "precautions, as may be necessary for preserving the purity of "milk, and for protecting it against infection or contamination."

The provisions of the Public Health and Factory and Work-shops Acts, relating to the sanitary condition of bakehouses, might also be adapted with the above Regulations to a larger use.

The occupier of a bakehouse may be fined if it is in such a state as to be, on sanitary grounds, unfit for use or occupation as a bakehouse, and it is much more important that occupiers of places where other kinds of food are prepared should be under similar liability. It would be well, also to prohibit the use of any place for the preparation for sale, storage or sale of food until it had been pronounced fit for such purpose.

It appears desirable that the Regulations (especially Nos. 30 and 32 quoted above) in regard to places where milk is stored or sold should be more thoroughly put in force, and it is therefore satisfactory to note that the County Council have agreed to transfer to the Local Authorities the duty of inspecting these and other businesses, and of enforcing the by-laws and regulations made by the Council.

INDEX TO PREVIOUS REPORTS

OF

THE MEDICAL OFFICER OF HEALTH.

APPENDIX.

1. Local Government Board Returns.

2. Summary of Causes of Death.

3. Report on the Disinfection of Rooms.

4. Circular on "Consumption and its Prevention."

5. Map of the Strand District showing where food is prepared and sold.

Local Government Board. Form A.

TABLE XV.

SUMMARY OF TABLES showing DEATHS during the Year 1898, in the Metropolitan Sanitary District of STRAND, classified according to DISEASES, AGES, and LOCALITIES.

NAMES OF LOCALITIES adopted for the purpose of these Statistics; Public Institutions being shown as separate localities. (*Columns for Population and Births are in Form B.*) (a)	MORTALITY FROM ALL CAUSES, AT SUBJOINED AGES. At all ages. (b)	Under 1 year. (c)	1 and under 5. (d)	5 and under 15. (e)	15 and under 25. (f)	25 and under 65. (g)	65 and upwards. (h)	(i)	Mortality from subjoined causes, distinguishing Deaths of Children under Five Years of Age. 1 Smallpox.	2 Scarlatina.	3 Diphtheria.	4 Membranous Croup.	5 Typhus.	6 Enteric or Typhoid.	7 Continued	8 Relapsing	9 Puerperal.	10 Cholera.	11 Erysipelas.	12 Measles.	13 Whooping Cough.	14 Diarrhœa and Dysentery.	15 Rheumatic Fever.	16 Ague.	17 Phthisis.	18 Bronchitis, Pneumonia, and Pleurisy.	19 Heart Disease.	20 Injuries.	21 All other Diseases.	22 TOTAL.
STRAND DISTRICT	274	63	34	5	10	125	37	Under 5		1											13	3	14			2	20		2	42	97
								5 upwds						1										1		41	38	41	7	48	177
IN HOSPITALS, &c., IN DISTRICT	265	23	20	12	26	156	28	Under 5			1											1	2			2	8	1	1	27	43
								5 upwds			1			7			2							5		14	26	26	12	129	212
TOTALS ..	539	86	54	17	36	281	65	Under 5		1	1										13	4	16			4	28	1	3	69	140
								5 upwds			1			8			2							6		55	64	67	19	177	399

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

Deaths occurring outside the district among persons belonging thereto	220	16	9	4	6	110	75	Under 5		1	1												3			1	6			13	25
								5 upwds			2			1												36	36	22	7	91	195
Deaths occurring within the district among persons not belonging thereto	236	16	9	10	24	147	30	Under 5																		1	7		1	16	25
								5 upwds			1			6			2							4		14	19	29	16	120	211

Local Government Board. Form A.

TABLE XVa.

Table of DEATHS during the Year 1898, in the STRAND SUB-DISTRICT, classified according to DISEASES, AGES and LOCALITIES.

NAMES OF LOCALITIES adopted for the purpose of these Statistics; Public Institutions being shown as separate localities. *(Columns for Population and Births are in Form B.)*	MORTALITY FROM ALL CAUSES, AT SUBJOINED AGES.								Mortality from subjoined causes, distinguishing deaths of Children under Five Years of Age.																				
									1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
													FEVERS.																
	At all ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.		Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus.	Enteric or Typhoid.	Continued	Relapsing.	Puerperal.	Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhœa and Dysentery.	Rheumatic Fever.	Ague.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease	Injuries.	All other Diseases.	TOTAL.
(*a*)	(*b*)	(*c*)	(*d*)	(*e*)	(*f*)	(*g*)	(*h*)	(*i*)																						
STRAND SUB-DISTRICT	147	31	26	1	5	66	24	Under 5		1										8	3	8			2	8			21	51
								5 upwds						1									1		20	21	24	3	26	96
STRAND UNION CASUAL WARDS, BEAR YARD	13	2				6	5	Under 5																					2	2
								5 upwds																		9	2			11
KING'S COLLEGE HOSPITAL ..	201	21	20	12	24	110	14	Under 5			1										1	2			2	8	1	1	25	41
								5 upwds			1			7			1						2		12	17	16	9	95	160
ST. PETER'S HOSPITAL	19				1	11	7	Under 5																						
								5 upwds																	2				17	19
RIVER THAMES	3					3		Under 5																						
								5 upwds																				3		3
TOTALS ..	383	54	40	13	30	196	50	Under 5		1	1									8	4	10			4	16	1	1	48	94
								5 upwds			1			8			1						3		34	47	42	15	138	289
The subjoined numbers have also to be taken into account in judging of the above records of mortality.																														
Deaths occurring outside the district among persons belonging thereto	140	9	3	1	3	70	54	Under 5														2				1			9	12
								5 upwds																	27	34	10	2	55	128
Deaths occurring within the district among persons not belonging thereto	205	16	9	10	24	119	27	Under 5																	1	7		1	16	25
								5 upwds			1			6			1						1		14	19	21	15	102	180

Local Government Board. Form A.

TABLE XVb.

Table of DEATHS during the Year 1898, in the ST. ANNE'S SUB-DISTRICT, classified according to DISEASES, AGES and LOCALITIES.

NAMES OF LOCALITIES adopted for the purpose of these Statistics; Public Institutions being shown as separate localities. *(Columns for Population and Births are in Form B.)* (a.)	MORTALITY FROM ALL CAUSES, AT SUBJOINED AGES.								Mortality from subjoined causes, distinguishing deaths of children under Five Years of Age.																					
										1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
														FEVERS.																
	At all ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.	Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhœa and Dysentery.	Rheumatic Fever.	Ague.	Phthisis.	Bronchitis, Pneumonia and Pleurisy.	Heart Disease.	Injuries.	All other Diseases.	TOTAL.
	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)																						
ST. ANNE'S SUB-DISTRICT ..	127	32	14	4	5	59	13	Under 5												5		6				12		2	21	46
								5 upwds																	21	17	17	4	22	81
HOSPITAL FOR WOMEN, SOHO SQUARE	16				1	15		Under 5																						
								5 upwds										1											15	16
HOSPITAL FOR DISEASES OF THE HEART, SOHO SQUARE ..	13					11	2	Under 5																						
								5 upwds																3				8		2	13
TOTALS ..	156	32	14	4	6	85	15	Under 5												5		6				12		2	21	46
								5 upwds										1						3		21	17	25	4	39	110

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

Deaths occurring outside the district among persons belonging thereto	80	7	6	3	3	40	21	Under 5			1	1										1			1	5			4	13
								5 upwds				2			1										9	2	12	5	36	67
Deaths occurring within the district among persons not belonging thereto	31					28	3	Under 5																						
								5 upwds										1						3		1		8	1	17	31

Local Government Board. Form B.

TABLE XVI.

Table of POPULATION, BIRTHS, AND OF NEW CASES OF INFECTIOUS SICKNESS, coming to the knowledge of the Medical Officer of Health, during the year 1898, (52 weeks) in the Metropolitan Sanitary District of STRAND, classified according to DISEASES, AGES, and LOCALITIES.

NAMES OF LOCALITIES adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	POPULATION AT ALL AGES. Census 1896.	Estimated to middle of 1898.	Registered Births.	Aged under 5 or over 5.	New Cases of Sickness in each Locality, coming to the knowledge of the Medical Officer of Health. 1 Smallpox.	2 Scarlatina.	3 Diphtheria.	4 Membranous Croup.	5 Fevers: Typhus.	6 Fevers: Enteric or Typhoid.	7 Fevers: Continued.	8 Fevers: Relapsing.	9 Fevers: Puerperal.	10 Cholera.	11 Erysipelas.	TOTALS.	Number of such cases removed from their homes in the several Localities for treatment in Isolation Hospital. 1 Smallpox.	2 Scarlatina.	3 Diphtheria.	4 Membranous Croup.	5 Fevers: Typhus.	6 Fevers: Enteric or Typhoid.	7 Fevers: Continued.	8 Fevers: Relapsing.	9 Fevers: Puerperal.	10 Cholera.	11 Erysipelas.	TOTALS.
(a)	(b)	(c)	(d)	(e)																								
SUB-DISTRICTS—																												
ST. ANNE, SOHO	12,048	12,150	261	Under 5		12	8	2								22		10	8									18
				5 upwds		20	32			5					7	64		15	31			1					1	48
STRAND	11,734	12,250	237*	Under 5		3	4									7		2	4									6
				5 upwds		10	3			3					4	20		9	3			3					1	16
WESTMINSTER WORKHOUSE, POLAND STREET	158		14	Under 5																								
				5 upwds																								
STRAND UNION WORKHOUSE, EDMONTON	774		7	Under 5																								
				5 upwds																								
DO. DO. BEAR YARD				Under 5																								
				5 upwds																								
KING'S COLLEGE HOSPITAL				Under 5																								—
				5 upwds		1				1						2		1				1						2
TOTALS ..	24,714	24,400	519	Under 5		15	12	2								29		12	12									24
				5 upwds		31	35			9					11	86		25	34			5					2	66

* 3 of these Births belong to the Parish of St. Martin-in-the-Fields.

TABLE XVII.

SUMMARY OF CAUSES OF DEATH IN THE STRAND DISTRICT IN 1898.

CAUSES OF DEATH.	Total Deaths	AGE AT TIME OF DEATH.												REGISTRATION SUB-DISTRICTS.				Totals.	
		Under 1 year.		1 to 5		5 to 15		15 to 25		25 to 35		35 to 45		45 to 55		55 to 65		65 to 75		75 and up.		St. Anne.		Strand.			
		Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
I.—SPECIFIC FEBRILE, OR ZYMOTIC DISEASES—																											
1. MIASMATIC—																											
Small-pox	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Measles	13	1	2	6	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	1	3	5	7	6
Scarlet Fever	2	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	1
Whooping Cough	4	—	2	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	3	1	3
Diphtheria ... ... ,,	4	—	—	2	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	1	1	—	3	1
Enteric Fever	3	—	—	—	—	—	—	1	—	1	1	—	—	—	—	—	—	—	—	—	—	1	—	1	1	2	1
Influenza	4	—	—	—	—	—	—	—	—	—	—	—	—	1	2	—	—	1	—	—	—	—	2	1	1	1	3
Other Miasmatic Diseases ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2. Diarrhœal Diseases	19	5	10	3	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	2	3	9	8	11
3. Malarial ,, ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4. Zoogenous ,, ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5. Phthisis ,, ...	81	—	2	1	1	1	1	6	4	7	4	20	6	14	7	4	—	1	2	—	—	22	8	32	19	54	27
Other Tubercular Diseases ...	22	4	3	5	5	1	2	1	1	—	—	—	—	—	—	—	—	—	—	—	—	2	3	9	8	11	11
6. Venereal ,, ...	5	1	1	—	—	—	—	—	—	—	—	—	1	—	1	—	1	—	—	—	—	1	1	—	3	1	4
7. Septic	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
II.—PARASITIC DISEASES	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
III.—DIETIC DISEASES (Alcoholic)...	10	—	—	—	—	—	—	—	—	1	1	4	1	2	—	—	—	—	1	—	—	4	—	3	3	7	3
IV.—CONSTITUTIONAL DISEASES																											
Malignant Disease	19	—	—	—	—	—	—	—	—	—	4	1	2	2	—	3	3	1	3	—	—	5	4	2	8	7	12
Acute Rheumatism	2	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	2	—	2
Rheumatism and Gout... ...	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	1	1	1	1
Other Constitutional Diseases...	7	—	—	1	—	—	—	—	—	2	1	—	1	—	1	1	—	—	—	—	—	1	—	3	3	4	3
V.—LOCAL DISEASES—																											
1. Convulsions and Dentition ...	14	4	4	3	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	2	4	5	7	7
Other Diseases of Nervous System	32	1	1	—	—	—	—	1	—	2	1	1	3	2	4	4	3	3	4	1	1	4	5	11	12	15	17
2. Diseases of Circulatory System ...	56	—	1	—	—	—	—	1	—	—	1	4	4	5	7	9	6	4	9	2	3	14	13	11	18	25	31
3. Diseases of Respiratory System...	114	9	9	7	6	1	—	2	1	3	2	3	3	8	5	6	12	8	15	6	8	20	22	33	39	53	61
4. Diseases of Digestive System ...	34	1	3	—	—	1	—	—	—	2	—	5	5	2	5	3	2	—	2	—	2	9	9	6	10	15	19
5. Diseases of Urinary System ...	14	—	—	—	—	—	—	—	—	2	—	1	3	1	—	1	1	3	1	2	—	4	—	5	5	9	5
6. Diseases of Reproductive System	2	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	1	—	1	—	2
7. Diseases of Bones and Joints ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8. Diseases of Integumentary System	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
9. Diseases of Organs of Special Sense	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10. Diseases of Gland like Organs ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11. Diseases of Lymphatic System ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
VI.—DEVELOPMENTAL—																											
Debility at Birth	18	10	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	6	6	2	10	8
Old Age	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	2	11	10	4	5	8	7	12	12
VII.—ACCIDENT AND VIOLENCE	14	2	—	—	—	1	—	—	—	—	1	4	—	3	—	1	1	—	—	1	—	9	1	3	1	12	2
VIII.—ILL-DEFINED (Marasmus) ...	4	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	3	1	3
TOTALS	523	39	47	30	24	6	5	12	6	20	16	43	30	40	33	32	30	22	40	23	25	118	87	149	169	267	256

Strand District Board of Works.

REPORT

ON THE

DISINFECTION OF ROOMS,

BY THE

MEDICAL OFFICER OF HEALTH.

Mr. Chairman and Gentlemen,

In my Annual Report for 1897 I mentioned that I had for some time been engaged in a series of experiments, with the view of determining whether any better method of disinfecting rooms could, with advantage, be substituted for fumigation by burning sulphur, which has been suspected to be unreliable in its action, and I hoped to be able to submit a report on the subject during 1898. I now beg to do so.

The object of applying disinfectant agents to rooms after cases of Infectious Disease is to destroy the organisms which are the cause of such disorders, and which are distributed throughout the rooms during the course of the disease. We know that many preserve their vitality for long periods, especially when protected, even to a slight extent, from the action of sunlight and air. Articles of clothing, carpets, bedding, &c., are retentive of these organisms, and are removed for treatment by steam, which effectually destroys all danger of infection, but the dust which is left behind in the room

harbours these organisms to a large extent. Did it settle only on the surface of walls, floor, furniture, &c., a thorough washing with soap and water (with some chemical added) would be sufficient to destroy them, but as the surfaces are not always susceptible of such treatment, and as moreover they are not smooth but generally full of crevices, simple washing cannot always be relied upon except as an adjunct to other methods.

Hitherto, however, most local authorities have relied upon the gas (sulphur dioxide) produced by burning sulphur; but of recent years many experiments have shown it scarcely deserves the confidence which has been placed in it. During the last two years with the assistance of your Analyst, Mr. C. H. Cribb, and of Dr. George Newman, Demonstrator of Bacteriology in King's College, I have conducted a considerable number of experiments with the view of determining how far sulphur dioxide may be trusted, and having ound the doubts which had been cast upon its use to be confirmed, I have tested several other agents which have been recommended and have examined by trial the different methods of employing them.

So far as sulphur dioxide is concerned, it appears to be able to kill the diphtheria organism, and probably would be equally useful after scarlet fever, if it is produced in proper quantities and we can ensure that it will reach the organism in sufficient strength in every part of the room. This, unfortunately we cannot always do, moreover it may injuriously affect metals and coloured materials. The more resistant organisms, such as those of Typhoid Fever, are not killed by this gas.

As a gas seemed from its ability to penetrate into all parts to be the most useful method of applying disinfectants, I turned my attention to other agents which might be so used. The majority of them, however, are more difficult to produce and no more efficient than sulphur dioxide. My attention was then directed to formic aldehyde, a gas discovered in 1868. Twenty years later attention was drawn to the fact that it possessed germicidal powers, but until last year no method had been devised whereby it might be utilised

in a gaseous condition for conveniently and safely disinfecting rooms. It was found to be soluble in water to the extent of 40 per cent. (the solution being known as "Formalin"). Attempts have been made by heating the solution under pressure, and with the addition of various chemicals, to liberate the gas for disinfecting purposes. These did not prove successful or were inconvenient in use. A curious action takes place when a solution of the gas is evaporated or concentrated above 40 per cent., two molecules of the gas unite, forming a white soapy body (paraform aldehyde) and when this is dried in vacuo over sulphuric acid (which absorbs the moisture) a white powder (trioxymethylene) results. This is equal to three molecules of the gas which is given off on being heated in the presence of moisture in a suitably constructed apparatus, such as the lamp made by the Formalin Hygienic Company. This lamp is inexpensive (12s. 6d.), light, and may be easily carried in a handbag. Heat is supplied from a methylated spirit lamp in the base and a cup at the top contains the powder above referred to, which for convenience in using is cast into tablets. The moisture produced by the burning spirit is allowed to escape through slits in the upper part of the apparatus, so that it may mix with the gas and prevent it again being polymerized. Care has to be taken that the wick of the lamp should project but little above the neck of the burner, else the tablets may become ignited, and rendered inert for disinfecting purposes. Ten tablets are used for disinfecting each 1,000 cubic feet of space. Fireplaces, windows and doors are sealed (as in sulphur fumigation) with strips of brown paper, the vessel charged with the tablets and the lamp lighted; the room is then closed for four, six, or more hours as may be required. At the end of that time the air of the room is found to be full of the gas which though irritating to the mucous membrane of the eyes, nose and mouth does not appear to have any injurious effect upon animal life, and the temporary irritation soon passes off. But the gas may always be neutralised by introducing some ammonia into the room, or the door may be left open for a few minutes before any one enters.

I am satisfied from my own experiments* that when properly used, formic aldehyde generated in this manner may be relied upon for disinfecting rooms after the removal of the textile articles. It has the disadvantage of not possessing great penetrative power, and therefore it should not be relied upon to disinfect bedding and such like. Its power to disinfect is believed to be due to the action it has upon albumen, combining chemically with it to form an insoluble and indecomposable substance. It has, however, been shown by numerous experiments to have no deleterious action upon metals, except in the case of iron and steel after long exposure. Wall papers, fur, leather, silk and other materials are unaffected by it, both as regards texture and colour, with the exception of articles coloured with fuchsine or safranin, two dyes which are not much used from their liability to fade. For disinfection of leather articles, books, papers and letters this appears to solve a difficulty. Hitherto, there has been no process which could be applied to such, without causing damage.

The cost of this process would be the same as in the sulphur method.

Chlorinated Lime.—A simple method recommended by the Cheshire County Council is the brushing over the ceiling, walls (including woodwork), and floors, with a mixture of chlorinated lime and water (one part of good chlorinated lime to a 100 parts of water by weight), or a clear filtrate of the same. Afterwards the room is to be thoroughly aired and the floor and all woodwork well washed with soap and hot water. This plan appears, however, to necessitate the removal of the paper. It might very well be used in rooms where the walls are limewashed, or where the paper is in a state rendering its removal desirable. Chlorinated lime has been recommended to be used in this way in rooms which have been inhabited by persons suffering from consumption.

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* Published in *British Medical Journal*, 13th August, 1898. A copy of the paper has been sent to each Member of the Board.

Sprays.—The Paris Municipality have for several years discarded sulphur fumigations, and in their place have applied a disinfectant (corrosive sublimate, bi-chloride of mercury) in solution, as a very fine spray, to every part of the room to be disinfected. The results have been satisfactory. The apparatus (an Equifex Sprayer) used consists of a strong metal reservoir containing the solution, and a hand-pump by which air is compressed to produce the spray which is an extremely fine one. There are also tubes whereby the spray may be projected against the surface to be disinfected.

Corrosive sublimate is, however, a very poisonous substance, and from published accounts the persons using it in this way run some risk. Moreover, I found on trial that metals not protected by paint or lacquer, showed the action of the mercury salt, while the gilt on wall papers became covered with dark specks. With a view to discover if other agents might be substituted for corrosive sublimate, I experimented with a number of other disinfectants* and I found that formalin could be used in the same apparatus as a spray without causing any deleterious effects upon wall paper, paint &c. Since then it has been shown that so used it is effective as a germicide when used in a very dilute state. When in Edinburgh during the recent meeting of the British Medical Association, Dr. Leslie Mackenzie, Medical Officer of Health for Leith, courteously gave me the opportunity of seeing how he conducts the disinfection of a room. The time occupied in spraying a room of 1,000 cubic feet is from fifteen to thirty minutes under ordinary circumstances. If the room is dirty or there is much dust, the operation takes longer, and may require to be done a second time. He informed me that the walls of a large ward of 20,000 cubic feet had been sprayed in slightly more than an hour. He now uses a formalin spray of a strength of a little over 2 per cent., and prefers it in place of all other forms of disinfection of rooms except washing. He had ceased to use gaseous disinfection, not because he considered it a thoroughly bad method

*The details were given in a paper read before the Society of Medical Officers of Health, and published in "Public Health," March, 1897.

of disinfection, or because he questioned the positive results of such disinfection, but because he had found the spray more simple and more rapid. He had, by this method, disinfected about 750 houses, ranging from slums to detached villas. He had disinfected hospital wards—some after scarlet fever, then occupied by measles; others after measles, after small-pox, diphtheria, erysipelas, chicken-pox, typhoid, &c. He had applied the spray after all the ordinary infections, from confluent small-pox to mild chicken-pox. Never in a single instance had he found any case traceable to the disinfected room. He used the spray also to disinfect the fever ambulance and the infected clothing wagon, and as the spray was easily applied in a few minutes, the vans could be disinfected after every time of use. The chief practical objection that at first caused him to delay the adoption of the spray for general disinfection was its possible effect on walls and wall papers. But in all the 750 instances, although all sorts of walls and furniture—gilded, veneered, polished, &c.—had been saturated, he had never received a single complaint.

The cost of a gallon 2 per cent. strength, sufficient to spray a room of 1,000 cubic feet capacity, is only twopence, and the operator is saved the trouble of pasting over all apertures with brown paper.

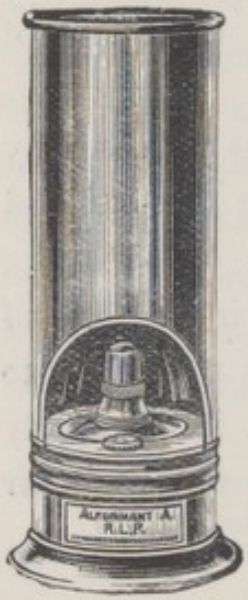
Formalin has an advantage over other agents, when sprayed upon walls, &c., in that formic aldehyde gas is given off, and thus brings its action to bear upon parts to which the spray could not obtain access,

The result then of my own experiments and of those of others is:

(1.) That fumigation of rooms after infectious disease, by burning sulphur is unreliable and should be discontinued as routine practice.

(2.) That formic aldehyde used either as a gas or in the form of spray is more efficient in its action, causes no injury to decorations &c. and the process of applying it (especially as a spray) occupies much less time than does sulphur fumigation.

EQUIFEX SPRAYER.



(3.) I beg to recommend that an Alformant Lamp (in addition to those now in use) and an Equifex Sprayer be procured. A suitable sprayer, weighing 30 lbs., and capable of containing three gallons of solution may be obtained for £8. 8s.

The saving of time is an important point both to the staff, especially during times of epidemic, and to the occupants of the rooms. At present your Board has to provide at the temporary shelter

accommodation for persons to stay there overnight, but with the spray method they could return to their rooms almost immediately after the rooms have been sprayed, and bedding, &c., which had been taken away for treatment in your Board's steam apparatus, can be returned within a couple of hours. As many persons, instead of availing themselves of the accommodation provided for them, prefer to stay with friends during the time their rooms are being fumigated, and thereby doubtless convey infection to them, the adoption of the process suggested will considerably reduce this risk. A room where persons may remain for an hour or two is all that the Board need provide.

I am, Mr. Chairman and Gentlemen,

Your obedient Servant,

FRANCIS J. ALLAN.

October 4th, 1898.

P.S.—Since writing the foregoing I have had the opportunity of reading an exhaustive report by Drs. Park and Guerard of the New York Health Department. They entirely corroborate my opinion of the value of formic aldehyde as a disinfectant. After detailing the tests which they have made they conclude that "Formic aldehyde gas is the best disinfectant at present known for the disinfection of infected dwellings." They also show how books, furs, leather, feathers, artificial flowers, ladies' hats and other articles which are injured by steam, hot air at 230 degrees F. or other disinfectants, may be efficiently and safely disinfected by formic aldehyde, in a closed chamber, with the aid of a partial vacuum, and a temperature of 110 degrees to 112 degrees F. Under such circumstances, also, a high penetrative power is developed so that bulky objects as bedding might be effectively disinfected. For the disinfection of rooms they recommend as a rule that when the gas is used, it should be in the proportion of 1 per cent. per volume, and the exposure should be for not less than two hours, the temperature being not less than 52 degrees Fahrenheit.

F. J. A.

Board of Works for the Strand District.

CONSUMPTION AND ITS PREVENTION.

Consumption is a communicable disease. Every case of Consumption has received the infective material (a minute living germ or microbe) either from man or infected food (milk and meat).

These germs are contained in enormous quantities in the matter coughed up by persons suffering from Consumption of the lungs, (Pulmonary Tuberculosis) and so long as this matter remains moist it is not dangerous, but when it becomes dry the germs may be inhaled in the form of dust, and thus produce the disease in the person inhaling it.

The germs are able to live outside the body for long periods, in damp, dark, dirty places, and especially in ill-ventilated, dark or overcrowded rooms, but they are killed promptly by **sunlight** and **fresh air.**

Some persons are specially liable to acquire this disease, that is to say they are unable to resist and throw off the germs of Consumption when attacked by them. This weakness may be in the constitution at birth, and care should be taken to protect such persons from any chance of catching the disease.

A similar want of resistance may be produced in persons by intemperance, overcrowding, insanitary conditions, dusty occupations, want of proper and sufficient food, by infectious and other lowering diseases.

Consumption is not necessarily fatal, but can often be cured if its nature be recognised early, and if proper means be taken for its treatment.

Consumption may be prevented:—

(1.) By measures which will improve the general health of the community, such as the provision of dwellings, to which air and sunlight can have free access, improvement in the ventilation of workplaces, removal of insanitary conditions generally, and the promotion of temperance;

(2.) By precautions to prevent the germs of the disease spreading.

Special Precautions.

A case of Consumption may be made practically harmless to others by preventing the matter coughed up drying to dust. This may be effected:—

Out-of-Doors by a consumptive person spitting into a small wide-mouthed bottle with a well-fitting cork, or into a special pocket spittoon. The bottle must not be emptied into dust-bins but the contents poured down the W.C. at least twice a day, and immediately afterwards washed out carefully with boiling water. A little disinfectant added to the bottle will keep flies away.

Indoors.—A bottle may be used, or the consumptive may spit into pieces of rag or paper which should be at once burnt. A consumptive person must not spit about the house or work-place, in cabs, omnibuses, tramcars, railway carriages, or public places (such as theatres, churches, schools, &c).

Care should be taken by patients not to soil the clothing, face or hands, with the expectorated matter. It should always be spat out into a bottle or paper and never swallowed, as by so doing it may infect other parts of the body.

If a handkerchief or other article is soiled with the expectorated matter, it should be kept wet until it can be boiled and washed.

All cups, spoons, knives, forks, &c., used by consumptive persons

must be carefully washed before being used by others. The remains of food left by a consumptive person ought not to be used by the healthy.

A consumptive person ought to have a separate bed, and if possible a separate room.

No consumptive ought to kiss or be kissed, except on the cheek or brow.

No consumptive mother should suckle her child.

General Precautions.

All sleeping and other rooms used by a consumptive person should be well lighted and well ventilated.

Consumptive persons can scarcely have too much fresh air. Windows of rooms occupied by them should be open top and bottom, both night and day, a screen being arranged, if necessary, to prevent direct draught.

Domestic cleanliness is of the first importance.

In cleaning rooms occupied by consumptives, damp dusters should be used, and tea-leaves or damp sawdust used in sweeping, so as to prevent dust flying about the room. Boil the dusters; burn the tea-leaves and sawdust.

Rooms which have been occupied by consumptives should be disinfected, thoroughly cleansed, scrubbed, whitewashed, papered or painted before they are again occupied. Carpets, rugs, bedding, clothing, &c., should be disinfected as after other infectious diseases.

Cows frequently suffer from Tubercular disease, and milk from such cows, especially when the udder is affected, contains the germs and thus disease may be communicated to children. Boiling the milk, even for a minute, effectually destroys any of these germs which may be in it.

All milk should therefore be boiled before being drunk.

Most children soon get used to the taste of boiled milk, but when they do not, the milk may be rendered harmless by placing it in a small tin saucepan, inside a larger one containing cold water, putting both on the fire together and boiling the water.

Disinfection.

It is necessary that washing and disinfection should be effectively carried out after every death from consumption.

The services of the Health Department are at the disposal of the ratepayers for this purpose. Immediate notice of such an event ought to be sent to the Medical Officer of Health, 5, Tavistock Street, Covent Garden, W.C.

During the currency of cases of tuberculous disease in which there is a discharge from the lungs or elsewhere, the Medical Officer will give any assistance in the way of disinfection which may seem expedient in the public interest.

Disinfection is carried out by the Board free of cost.

By Order of the Board,

FRANCIS J. ALLAN, M.D.,
Medical Officer of Health.

5, Tavistock Street,
Covent Garden, W.C.


BRITISH MUSEUM
62
FEB

ST. ANNE'S SOHO.

Scale of Feet.

Feet 100 0 100 200 300 400 500 1000 Feet

T. Way Lith. London


LICENSED PREMISES & HOTELS WHERE FOOD IS SOLD
RESTAURANTS AND COFFEE ROOMS.
BAKEHOUSES.
BUTCHERS AND FISHMONGERS.
BANKS
CURSITOR STREET
CHANCERY LANE
BREAMS BUILDINGS
RECORD OFFICE
NEW SQUARE
CAREY STREET
BELL YARD
NEW COURT
PORTUGAL STREET
KINGS COLLEGE HOSPITAL
BANKRUPTCY OFFICES
ROYAL COURTS OF JUSTICE
FLEET STREET
HOLYWELL WARD
STCLEMENT DANES
CLEMENTS INN
NEW INN
NEWCASTLE STREET
WYCH ST
HOLYWELL STREET
ST CLEMENTS DANES CHURCH
THE TEMPLE
Temple Gardens
THE APPROACH
Temple Station
Temple Pier
KINGS COLLEGE
SOMERSET HOUSE
EMBANKMENT
VICTORIA
Pier
Waterloo
RIVER
THAMES
PRECINCT OF THE SAVOY
STRAND
WELLINGTON STREET
CATHERINE STREET
RUSSELL STREET
BOW STREET
LONG ACRE
COVENT GARDEN MARKET
KING STREET
TAVISTOCK STREET
HENRIETTA STREET
ST PAULS CHURCH
FLORAL HALL
VAN STAND
Scale of Feet