[Report 1903] / Medical Officer of Health, King's Lynn Borough & Port.

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Port and Borough of King's Lynn.

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH

FOR THE YEAR 1903,

BY

H. CALTHROP ALLINSON,

Associate of King's College, London.

WITH WHICH IS INCLUDED

THE ANNUAL REPORT OF THE BOROUGH SANITARY INSPECTOR,

MR. J. W. SHAW,

Associate of the Sanitary Institution.

King's Lynn:

WATTS AND ROWE, PRINTERS, ST. JAMES' ROAD.

URBAN AND PORT SANITARY COMMITTEE

1903-4.

CHAIRMAN: ALDERMAN J. T. SAVAGE.

THE MAYOR (W. R. SMITH, ESQ.)

ALDERMEN GREEN, T. PATTRICK & A. REAM.

COUNCILLORS BARDELL, T. BROWN, W. H. BROWN, F. J. CARPENTER, W. NICHOLLS, W. SAVAGE, THEW and THOMAS.

Meetings: THE THIRD THURSDAY IN EACH MONTH AT 11 A.

TO THE CHAIRMAN AND MEMBERS OF THE HEALTH COMMITTEE OF THE BOROUGH OF KING'S LYNN.

HEALTH OFFICE,

KING'S LYNN,

February, 1904.

GENTLEMEN,

I beg to submit my Third Annual Report, as your Medical Officer of Health for 1903, which contains the necessary statistics and other matters generally included.

At a recent Meeting of the Council special reference was made by one member to the persistency of Typhoid Fever in the Borough, and another suggested that an official explanation should be asked for.

Much of this Report is therefore given to this subject, and if the inferences, I am able to deduct, after three years particular attention given to it, are considered by you sufficiently trustworthy, I feel much will have been effected for the welfare of the town.

I am, Gentlemen,

Your obedient Servant,

H. CALTHROP ALLINSON.

BOROUGH OF KING'S LYNN.

STATISTICAL SUMMARY 1903.

Population estimated to middle of 1902—Total 20,525.

Marriages 150.

Births ... { Males 243 / Females 250 } Total 493.

Annual Rate of Births per 1000 of Population—24·01.

Deaths ... { Males 148 / Females 144 } Total 292.

Gross Annual Rate of all Deaths registered—14·22.

Net Annual Rate (less Deaths of Non-Residents in Public Institutions)—13.34.

Excess of Registered Births over Deaths—201.

Infantile Mortality 119·4 per 1000 Births.

Area of Borough 3,099 Acres.

POPULATION OF DISTRICTS AT CENSUS OF 1901.

District No.	1	... ...	5024
,,	2	... ...	7547
,,	3	... ...	2155
,,	4	... ...	4075
,,	5	... ...	1327
			20,128

THESE DISTRICTS ARE MAINLY AS FOLLOWS:—

No. 1.—King's Lynn, south of Purfleet and Clough Fleet.

No. 2.—King's Lynn, north of Purfleet and Clough Fleet.

No. 3.—King's Lynn, district north of Fisher Fleet and Loke Road, and eastward of Old Town Wall to Extension Walk and South Lynn Boundary.

No. 4.—South Lynn, within the South Gates.

No. 5.—South Lynn, outside the South Gates.

A map, showing these districts, is kept at the Health Office. Upon it is also indicated the incidence of Typhoid Fever during the three years 1901-3.

Table 1.—Borough of King's Lynn.—Vital Statistics of Whole District during 1903 and previous years.

Year.	Population estimated to middle of each Year.	Births.		Total Deaths Registered in the District.				Total Deaths in Public Institutions in the District.	Deaths of Non-residents registered in Public Institutions in the District.	Deaths of Residents registered in Public Institutions beyond the District.	Net Deaths at all Ages belonging to the District.	
				Under 1 Year of Age		At all Ages.						
		Number	Rate.	Number	Rate per 1000 Births Registered.	Number	Rate.				Number.	Rate.
1	2	3	4	5	6	7	8	9	10	11	12	13
1893	18706	554	29·61	71	128·15	351	18·76	52				
1894	18879	507	26·85	101	199·21	386	20·44	37				
1895	19055	581	30·49	90	154·90	351	18·42	46				
1896	19230	540	28·08	66	122·22	322	16·74	48				
1897	19407	553	28·49	72	130·19	411	21·17	78				
1898	19586	573	29·25	105	183·24	412	21·03	62				
1899	19764	542	27·42	108	199·26	432	21·85	75				
1900	19944	538	26·97	64	118·95	375	18·80	53				
1901	20128	531	26·38	84	158·19	370	18·38	76	23	1	347	17·239
1902	20348	514	25·25	49	95·33	285	14·006	69	16	?	269	13·21
Averages for Years 1893-1902	19504·7	543·3	27·80	81·0	149·12	369·5	18·34	59·6				
1903	20·525	493	24·01	59	119·4	292	14·22	65	19	1	274	13·34

Rates in Columns 4, 8 and 13 calculated per 1,000 of Estimated Population.

At CENSUS 1901.—Total Population at all Ages 20,128. Number of Inhabited Houses 4,548. Average Number of Persons per House 4·42.

Area of District in Acres (exclusive of area covered by Water), 3,099.

VITAL STATISTICS.

Population of King's Lynn at last Census was ...	20,128
Estimated Population to middle of 1902	20,348
,, ,, ,, 1903	20,525

This is estimated on the average annual increase (176·8) between the Census of 1891 and that of 1901.

The figures provisionally compiled by the Registrar General for the convenience of the Medical Officers of Health afford a ready comparison of the statistics of King's Lynn with the general statistics of England and Wales:

1903.

ANNUAL BIRTH-RATES AND DEATH-RATES, AND RATES FROM THE SEVEN CHIEF EPIDEMIC DISEASES.

	ANNUAL RATE PER 1000 LIVING.			INFANT MORTALITY
	7 Births.	Deaths from all causes.	Deaths from Seven Chief Epidemic Diseases.	Annual Death rate of Infants under one year per 1000 Births.
England & Wales	28·4	15·4	1·46	132
Rural ,,	27·3	14·8	1·08	118
76 Great Towns	29·7	16·3	1·89	144
103 Small ,,	27·4	14·6	1·41	135
King's Lynn	24·01	14·22	1·36	119·4
,, 1902	25·25	14·006	0·83	95·33

By comparing the King's Lynn rates for 1903 with those of 1902, it will be observed that the Birth Rate is lower, as well as all the other rates higher.

The rise in deaths from the seven Chief Epidemic Diseases, and in children under one year are particularly increased by 13 deaths from Diarrhœa, nine of which occurred in children under one year of age.

BIRTHS REGISTERED IN KING'S LYNN 1904.

BIRTH RATE

Is 24·01 as against 28·4 for all England and Wales. By reference to official Table I. it will be observed that the rate for the last four years has been persistently low.

INFANTILE MORTALITY.

That is, deaths of children under one year, is 119·4 per 1000 births, far lower than the average of the preceding 10 years, which is at a rate of 149·12. It is also far lower than the average for all England and Wales.

DEATH RATE FROM ALL CAUSES

Is 14·22; this is lower than in most of the preceding 10 years, the average death-rate for that period being 18·28, and the rate for all England and Wales is 16·3.

DEATHS FROM THE SEVEN CHIEF EPIDEMIC DISEASES.

These diseases comprise:—

		1903	1902
1	Small Pox	0	0
2	Measles	0	4
3	Scarlet Fever	2	0
4	Whooping Cough... ...	8	0
5	Diphtheria	1	0
6	Fevers ... Typhus, Typhoid, Other Continued	4	7
7	Diarrhœa	13	6
	Total ...	28	17

Or Rate per 1000—1·36.

CLASSIFICATION OF DEATHS IN DISTRICTS, 1903.

	Population at Census.	Deaths.	In Infirmary.	In Hospital.	Total.
District 1	5024	72	7	4	83
,, 2	7547	80	8	4	92
,, 3*	2155	23	—	2	25
,, 4	4075	36	14	4	54
,, 5	1327	15	1	1	17
	20128				271

Four Non-Residents died in Infirmary	4
Fifteen ,, ,, West Norfolk and Lynn Hospital	15
One Stranger found drowned in Estuary Cut	1
One Stranger died in Port Isolation Hospital	1
Total Deaths Registered in King's Lynn	292

* This Includes 4 Deaths occurring in Highgate proper, the population of which was not singularised at the Census.

Corrected Death Rate see Official Table No. 1

per 1000 ... 13·21

SUMMARY OF INQUESTS HELD BY MR. E. M. BELOE, BOROUGH CORONER.

Natural Causes	Heart failure
Natural Causes	Rupture of blood vessel
Accidental Death	Drowning
Open Verdict (a stranger)	Found drowned in Estuary Cut
Natural Causes	Heart disease
Accidental Death	Crushed by truck
Accidental Death	Crushed by truck
Temporary Insanity ...	Suicide by drowning
Temporary Insanity ...	Suicide by taking Oxalic Acid
Accidental Death	By being Run over by Cart
Accidental Death	By Drowning
Natural Causes	Heart Disease
Accidental Death	By Drowning
Accidental Death (from Grimston)	Effects of burns
Accidental Death	By Drowning

NOTIFICATIONS OF DISEASES IN 1903, AS COMPARED WITH THE LAST FIVE YEARS.

	1898	1899	1900	1901	1902	1903
Typhoid	150	111	58	49	40	47
Diphtheria and Croup ...	42	26	83	33	6	18
Erysipelas	?	?	19	16	13	37
Scarlet Fever	24	26	8	38	43	146
Puerperal Fever... ...	0	0	3	0	2	2
Small Pox	0	0	0	0	2	0
	216	163	171	136	106	250

Table III.—Borough of King's Lynn.—Cases of Infectious Disease notified during the Year 1903.

NOTIFIABLE DISEASE.	CASES NOTIFIED IN WHOLE DISTRICT.						TOTAL CASES NOTIFIED IN EACH LOCALITY.						
	At all Ages.	At Ages—Years.											
		1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and upwards	1	2	3	4	5	6	7
Diphtheria	17	1	7	7	2		2	7	1		6	1	Hospital Cases received from other Districts.
Membranous Croup	1	1									1		
Erysipelas	37	4	2	6	15	10	14	11	2		9	1	
Scarlet Fever ...	146	43	76	23	4		48	36	25	9	21	7	
Enteric Fever ...	47	4	12	11	20		9	8	15	2	9		4
Puerperal Fever ...	2				2							2	
Totals	250	53	97	47	43	10	73	62	43	11	46	11	4

Table IV.—Causes of, and Ages at Death during Year 1903.

Causes of Death.	Deaths in or belonging to whole District at subjoined ages.							Deaths in or belonging to localities (at all ages).							Total Deaths in Public Institutions in the District.
	All Ages.	Under 1 year	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Scarlet Fever ...	2		2					1		1					
Whooping-Cough ...	8	3	5					5	2		1				
Diphtheria and Membranous Croup ...	1			1					1						
Enteric Fever ...	4				2	2		1							3
Epidemic Influenza	4					2	2	1			1	1			1
Diarrhœa	13	9	2				2	2	6	2		3			
Enteritis	4	3				1		1	1			1			1
Erysipelas	1					1			1						
Other Septic Diseases	2		1			1						1			1
Phthisis	19		1	2	4	12		2	10		1	1	2		3
Other Tubercular Diseases	8	2	1	3	1	1		3	1	1					3
Cancer, Malignant Disease	24					15	9	3	6	2		3	2		8
Bronchitis	32	3	4			8	17	13	4	1		7	2		5
Pneumonia	21	7	1	1		9	3	7	6			4			4
Pleurisy	1					1				1					
Other Diseases of Respiratory Organs ...	3					3			1						2
Alcoholism, Cirrhosis of Liver	3					3						1			2
Venereal Diseases ...	2	1	1										1		1
Premature Birth ...	9	9						1	2	1		3	1		1
Heart Diseases ...	28				1	15	12	8	8	4	1	2	2		3
Accidents	9	1	1	1	2	2	2	4	2	1				1	1
Suicides	2				1	1		1		1					
Renal, Prostatic, &c.	8					4	4	1	3			1			3
Old Age	28						28	7	8	1		2	1		9
All Other Causes ...	56	21	3		4	15	13	11	18	3		6	4		14
All Causes	292	59	22	8	15	96	92	72	80	19	4	36	15	1	65

DEATHS FROM NOTIFIABLE DISEASES AND OTHER DISEASES MORE OR LESS PREVENTIBLE.

Scarlet Fever	2
Whooping Cough	8
Diphtheria	1
Typhoid or Enteric Fever	4
Diarrhœa	13
Enteritis	4
Erysipelas	1
Other Septic Diseases	2
Tubercular Diseases	27
Venereal	2
Alcoholism	3
	67

SMALL POX

Has fortunately not invaded the Town, but there is and has been much danger from communication with several Midland Towns and more particularly certain Ports in the North. In the week ending February 6th, of this year, there were no less than 95 cases of Small Pox notified mainly in the Towns indicated. Whilst Small Pox continues so widely spread it would be rash indeed to utilise the Small Pox Hospital for other purposes, as is so often suggested.

SCARLET FEVER

Caused two deaths. This disease has been widely spread throughout the Country and has been of a particularly mild type often making its recognition difficult.

The notifications of this disease numbered 146, probably far less than the real number of cases.

Great difficulty has been experienced in keeping the disease from spreading in the Schools.

As such difficulty is experienced in keeping children isolated particularly in smaller dwellings much has been said about the advisability of a hospital for infectious diseases, but experience is showing that such hospitals are not giving the expected result and can only be maintained at a great cost per bed.

WHOOPING COUGH

Caused 5 deaths.

DIPHTHERIA

Caused one death, but the cases notified were 17 against 6 in 1902.

There is much reason to suppose that fowls, particularly when kept in improper places (narrow back yards and kitchens) are often the cause of the spread of this disease.

CONSUMPTION OR TUBERCULAR DISEASE OF THE LUNGS AND OTHER ORGANS

Caused 27 deaths as against 34 in 1902 and 41 in 1901. This is a distinct improvement, and which, one is permitted to believe, will be constant. It is undoubtedly due to the improved sanitary regulations, foremost amongst which are the prevention of overcrowding in workshops and elsewhere, the systematic examination of dairies, as well as the inspection of meat.

In many Towns, in nearly all the Railway Stations, great publicity is now given by printed placards as to the dangers of spitting. As Medical Officer of Health I have been reproached on several occasions that such placards are not exhibited in Lynn, such a step is certainly advisible, but has seemed to me premature

and bordering upon the ridiculous, whilst pollution of all sorts is persistently allowed to remain upon the pavements until removed by the force of the traffic and the weather.

Apart from the sanitary point of view surely if King's Lynn wishes general prosperity, desires an increase in private residents, or expects its schools to receive proper patronage, surely it might at least try to make its streets more inviting.

TYPHOID FEVER

Caused only four deaths in Lynn during 1903, as against seven deaths in the previous year, but unfortunately 47 notifications were received against 40 in 1902.

In addition to the increase of notifications received, it is disquieting to realise that the number of deaths certified as caused by diarrhœa and enteritis is nearly three times multiplied *i.e.* 17 deaths from these latter causes as against 6 in 1902.

I have been requested to make a special report upon the causes of this increase and the causes of the persistency of typhoid fever in the town, and as such extraordinary views and arguments are adduced by people who have but little clear knowledge of what typhoid fever is, or what its causes, I will try to condense what is professionally taught upon the subject.

Typhoid or enteric fever is a specific disease due to the introduction of specific germs into the human system.

The term specific is applied to these germs because not only can they be recognised under the microscope, but also by other characteristics they are known to be the special germs or seeds capable of causing the special fever called typhoid.

There are two main channels by which they can enter the system, by the mouth to the stomach, and by the air passages to the lungs.

Having entered the system they increase and multiply, and after about twelve days commence to cause the special symptoms of typhoid fever.

As the intestines more particularly become the seat of the disease, so it is that the discharges from the intestines are more constantly and particularly dangerous than other secretions of the body.

Whether the breath of a typhoid patient is liable to cause infection is probably open to doubt, but it is certainly more likely to be infectious if the patient is suffering from the lung complications so common in this disease.

The secretions from the lungs are undoubtedly dangerous whether food be immediately contaminated by them, or that in badly nursed cases, in filthy homes, the expectoration be allowed to remain upon the floor until becoming dust of the air it is equally liable to infect food as to enter the air passages of others.

Much publicity was given last year to an outbreak of typhoid fever on board the training ship "Condor." It was traced to the using of soiled blankets bought up from the seat of war in South Africa, and which more or less soiled found a market in England, many were in a grossly filthy condition and were found teeming with typhoid bacilli, which had retained their vitality for months, and apparently caused infection by germ laden dust entering the air passages.

Typhoid germs have been proved to retain their vitality for months in filth polluted soil.

One point in connection with typhoid fever requires special attention, it seems clearly established that the emanations or effluvia from typhoid intestinal discharges are capable of causing disease in those who inhale them.

This is probably the explanation of those mysterious cases occurring from time to time in Hospitals and other places, where the water and milk supply as well as other sanitary requirements are above suspicion.

Such cases occur most frequently amongst those who are nursing typhoid, or in small houses where sufficient air space for unusual sickness does not exist.

It is not a frequent cause, if it were all general hospitals would refuse to receive typhoid, but it is sufficiently frequent as to cause disquietude as to the advisability of admitting typhoid into general wards.

However such causes as personal contact by nursing, as ærial infection from filth polluted soil, and such unusual circumstances as the "Condor" outbreak, bear but a small proportion to the spread of typhoid compared to the preponderating causation by excremental pollution of water and various forms of food, that without neglecting to bear in mind their powerful agency under certain circumstances we must consider in what proportion they may act as factors in the local persistence of typhoid.

Forty-seven cases of typhoid fever were notified during 1903, four of which were cases admitted into Lynn public institutions from other districts.

There were therefore forty-three cases apparently originating in Lynn.

One case appeared to be the cause of spread of the disease to nine others, and sixteen cases occurred in eight entirely distinct establishments, in each of which there were two cases.

Deducting these seventeen cases of possible causation by contact, we have twenty-six separate and distinct outbreaks requiring investigation as to probable causation.

Whatever may have been the cause of the disease in the case of the patient who apparently was the medium by which the disease reached so many others we will not discuss, but state that it was of possible local origin as another case (not belonging to this series) was occurring at the same time on the same side of the street but three doors away.

As the circumstances were very unusual, and that but for this batch of personal contact cases, we might have congratulated ourselves with a decreasing list of notifications, it is interesting and instructive to give a somewhat lengthy reference.

The first of the series was the eldest of three sisters each living in the same locality but in different streets; shortly after it was recognised that she was suffering from typhoid fever, one of her daughters took it, then her husband who died, then another daughter and finally her son. Careful attention was given to all possible causation, distinct instructions given to have all water and milk boiled, the cases were carefully nursed by

the District Nurses, but in spite of this twenty days after the mother was notified (after several days indisposition) the daughter was recognised as suffering, then after six days the father and other daughter, and five days later the son. Just after the father and daughter were notified, a sister who assisted to sit up at night contracted the disease, to be followed by her husband sickening, and then one child, and finally during this year two other children not included in the statistics for 1903.

Whilst these cases were occurring a third sister who had also helped to nurse was notified, and died of the disease.

As the greatest care was not only enjoined but was acted upon, and the houses of the first and second sister being without sanitary defects, and the members of the families most scrupulously clean in all matters, we have I think a remarkable and striking example of contact causation.

Before dismissing consideration of such causation I will briefly state that in the sixteen cases occurring in eight separate establishments one was a nurse in one public institution nursing a typhoid case, the other a patient in another institution with typhoid present in ward.

In the six other cases of what **may** have been contact, it was in each case more probably due to other causes.

Having eliminated the possible contact cases we have to consider the probable causation of twenty-six separate outbreaks to which we may afterwards add the six cases not so likely to have occurred from contact causes.

We have to consider whether these twenty-six were caused by ærial infection from filth polluted soil, from extraordinary causes or the more usual and preponderating causation by

Water contaminated by typhoid excrement.

Milk diluted by same.

Food especially shellfish from beds lying close to outfall of sewer contaminated by typhoid discharges.

Food of all sorts contaminated by insects carrying and depositing typhoid germs.

It will be advantageous to pass to the consideration of the more usual causes, commencing with the last, that is **Insect born Typhoid.**

This may seem far fetched, but it is not so, it was considered by some authorities during the late war as a very potent cause.

Chloride of lime used to disinfect the latrines was carried a long distance to the kitchens by flies, and the meat from the deposit of the lime looked as if dusted with sugar.

It is easy to conceive that flies may occasionally carry infection—but since privies with their swarms of flies no longer exist in this town—I think we may exclude this as a factor of any of the cases occurring in 1903.

It is one reason, amongst many others, why I have persistently advocated washing of the pavements and the keeping back yards and alleys properly surfaced and drained.

Raw or Imperfectly Cooked Shell Fish containing typhoid germs is a well known cause particularly in oysters and mussels from beds receiving sewage. Not only do the germs exist in the liquid in the shells, but also in the bowels of the shell fish.

As much attention has been called to this danger by several outbreaks proved to be of shell fish causation, ever since I have been Medical Officer of Health special investigation has been made in each case as to the possibility of this as a local cause, but during the three years of my tenure of office, nothing has led me to assume that contaminated shell fish has been a proved or more than a possible factor in any single case.

The answers given as to the patient eating shell fish have been surprisingly negative, so many never touching them upon any account, and in case after case the result of inquiry was such as to eliminate any probability of such causation, except in one case only.

A young man had for the first time eaten mussels, eaten them raw, attacked soon after by colic, he naturally assumed, and with the greatest probability that the mussels caused the colic. He developed typhoid, of which he died, but beyond the fact that he had eaten mussels there was nothing to corroborate that the typhoid was due to this cause, the date of the development of the disease not being consistent with the accepted period of incubation.

However it is right to allow the possibility in this case, but it is equally right to state that the house he lived in was in an area with a very, very bad typhoid history.

By consulting my maps, one indicating the incidence of all cases of typhoid notified in 1901 and 1902, the other those of 1903 and 1904 to this date, I find that not a single case has been notified in the Tuesday Market Place, King Street, High Street, St. James' Street, St. James' Road, Railway Road and London Road to the South Gates during a period of over three years, and also that Kirby Street, Stanley Street, Marshall Street and Waterloo Street, all of which have been in the past most severely attacked by typhoid fever, are equally free from a single notification. Are we to assume that the inhabitants of these streets, and I have been careful to mention only these streets where the courts and alleys* in addition to their frontage houses have yielded no notifications, are we to assume that they never eat shell fish or that they now eat it better cooked?

Adulterated Milk a Cause.—Here again careful investigation has been systematically adopted, and the results of the enquiries compared, but to no purpose except to lead me to say that the milk supply of the town appears to be very good and not a factor causing typhoid fever.

Examination into the milk supply of the three sisters, revealed that all took their milk from the same salesman. We felt this supply might be a cause, but all research was in favour of the milk being good, the premises in every way clean and well kept; such suspicion as might have arisen was further averted by the fact that the business being large some distinct evidence would be found that the customers suffered more than the customers of others, but this was not the case.

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*This is not strictly correct, a case was notified in 1902 as occurring in Brewery Buildings, London Road.

I think then that we may form the conclusion that if milk and shell fish were factors in the propagation of typhoid fever in 1903 it is at least strange that by their combined agency no case has occurred during three years in the long continuity of streets and roads I have already referred to.

Water Contaminated by Typhoid Excrement is by far the most constant cause of typhoid, and I cannot find any reasonable argument that the persistence of the disease in this town is not due to this cause, but upon the contrary that everything leads to that inference. That the Tuesday Market, King Street, High Street, and other roads and streets that with their courts have yielded no notification leads to the inference that by their importance they have received prior and proper attention to the efficiency of their mains and other service pipes.

Many other thoroughfares would seem to be in nearly as satisfactory a condition as these specially referred to. By comparing the two maps it is easily seen that nearly all the cases of typhoid occurring during the three years have effected very closely the same area or cluster of houses.

Water contaminated by typhoid discharges is by far the most constant cause of this disease and as such is naturally the first to be supposed and if possible to be excluded.

It is undoubted that the present water supply from Gayton is above suspicion. I have heard of no cases occurring in Gaywood which is supplied by it, I have received no notifications of any cases along its first course except one case on Bridge Terrace.*

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*This house has previously to 1901 been subject to Typhoid Fever.

There has been no wide epidemic of typhoid fever affording suspicion of its pollution exterior to the East Gates, nor is there any reason to suspect that any of the bigger water mains of the town are faulty, for we have the fact of the series of streets above named being free from disease, which would not be likely if the general water supply of Lynn were at fault.

Therefore if water contaminated by typhoid is a cause we must seek for evidence not by further consideration of the water as conveyed in the principal water mains, but by supposing possible faults in the smaller mains and still smaller service pipes.

Having excluded the cases of contact causation, and finding no probability of extraordinary causes, and after a negative enquiry as to probability of shell fish or milk causation, and finding nothing to justify suspicion that the larger water mains are faulty, we have left two causes, and have to decide which, if both are factors, is the worst.

a. Aerial infection from filth polluted soil.

b. Defective smaller mains and service pipes.

Considering ærial infection first, we may assume that it certainly is not a likely cause in

Spread Eagle Estate.
Bridge Terrace.
Frederick Place.
Keppel Street.
New House in Cromwell Terrace.
House in Friars Street corner of Gladstone Road.
East Street.

neither is it likely to be a cause in the new streets, George and Lansdowne on this side of the Loke Road and the other new streets on the other side.

It is certainly more probable in Atto's Yard, California Yard, Vicarage, Priory and Crooked Lanes, but it will be seen that these neighbourhoods have yielded but few cases in 1903, and we know that attention has recently been given to their water supply.

I think that if ærial infection from filth polluted soil may at any time have been a cause of typhoid fever, particularly previous to the abolition of so many privies, we have no reason to think that any court, however undesirable, is in such a filthy condition at this time as to render the air infectious.

It will now be asked how does the water become contaminated and it may reasonably be replied that if leaks of any sort exist underground in a soil such as that of Lynn, pollution will sooner or later occur.

It has been argued that a leak in a main would be at once detected by the pressure in the main forcing the water up to the surface, in extreme cases roadways blowing up, with cabs falling in.

There are leaks and leaks, there is the possibility but not probability of big mains being fractured, but there is the far greater probability of smaller leaks at points of connection, leaks from corrosion and other defects.

With a soil so accommodating as the mud upon which Lynn has developed, and the water under the town (the subsoil) so near the surface, rising and falling it is said with the tide, it is reasonable to suppose that many a leak great or small would find some ready channel, and pass undetected, and we know of many such instances.

We have been from time to time so positively assured that leaks do not exist, or if occurring they are immediately detected, but yet after such statements have been made, we have received later on the flattering assurance that since a more recent date millions of gallons of water have been saved from fresh discovered leaks.

Again it is so often adduced that conceding that leaks do exist, how can pollution enter, since the pressure is so great? Certainly, but are we to assume that the water is never turned off for repairs, and that if methods have been invented to avoid danger, whether the time honoured and ready means of turning the stop cock is not generally adopted.

I think reference to the spot map will give us satisfaction and genuine assurance that the mains and other service pipes of many large areas besides the suite of streets and roads referred too, are now tight and sound, and that the typhoid fever recently so universal has nearly, if not completely disappeared from them.

When time and money have allowed the necessary attention to all pipes not above suspicion, I think that we shall be able to congratulate ourselves that endemic, that is persistent typhoid fever of local causation is a thing of the past, but that if any mains or other pipes still exist in parts of the town that still seem to be typhoid areas, or in any other parts of the town, in the corroded, clogged up and foul condition of some recently taken up, absence of typhoid will be accidental.

Until all is made good we must persist in the best defensive means at our disposal, continuous improvement of all surfaces, and the systematic flushing out of all doubtful mains with special

attention given to all water pipe ends; and before concluding I think it necessary to call attention to the undesirability of carefully laying down mains in new streets, and neglecting to have the roadway properly and promptly made up, which may be an explanation of cases of disease that have occurred in the Spread Eagle Estate, which is not a single example of a possible danger.

DIARRHŒA AND ENTERITIS

The necessity of uncontaminated water is emphasied by referring to the 17 cases of these diseases, most frequently first cousins of typhoid fever. I give seriatim the locality of the seventeen deaths certified as from these causes. There absence in Tuesday Market, High Street, etc., group of streets is strikingly remarkable.

1. Surrey Street.
2. Queen Street.
3. Port Isolation Hospital (Foreign Sailor).
4. Valinger's Road.
5. North Street.
6. Checker Street.
7. St. Ann's Fort.
8. From Hardwick.
9. Norfolk Street (not the old Grass Market portion).
10. Broad Street.
11. Cresswell Street.
12. George Street.
13. Apparently contracted opposite Old Town Wall but Died in Austin Street.
14. Sedgeford Lane.
15. Douro Street.
16. Douro Street.
17. Nelson Street.

It can hardly be suggested that the continuous heat of 1903 with the abundance of plums and fruit caused this increase in diarrhœaic disease.

THE LOCAL ADMINISTRATION OF THE FACTORY AND WORKSHOPS ACT

Under Sec. 132 of this Act, the Council's Medical Officer of Health is now required in his annual report to report specifically upon the administration of this act in workshops and work places so far as the matters under the charge of the council are concerned, and to send a copy of his report, or of so much of it as deals with this subject to the Secretary of State.

In your Inspector's Report which is appended will be found such specific report as I believe is required, and as Medical Officer of Health, I report that this Act is administered in this Borough in an efficient manner, so far as matters under the charge of the Borough Council are concerned.

BOROUGH OF KING'S LYNN.

ANNUAL REPORT

. . OF . .

SANITARY INSPECTOR.

TOWN HALL,

KING'S LYNN.

TO THE CHAIRMAN AND MEMBERS OF THE HEALTH COMMITTEE.

GENTLEMEN,

I beg to submit my Fifth Annual Report upon the work of the Sanitary Department during the year ending December, 1903.

Systematic inspection of the district is effected as far as possible.

The proper ventilation of the Town Sewers is a matter requiring serious attention, great many complaints are made with reference to sewer smells emitted from the street manholes.

The laying of the New Sewer on Saddlebow Road was a much needed sanitary improvement carried out during the year.

I am, Gentlemen,

Your obedient Servant,

JOHN W. SHAW.

Borough Sanitary Inspector.

SUMMARY OF NUISANCES.

Nuisances investigated	441
Statutory Notices Served	43

Drainage.

New Drains Laid	40
Drains Repaired	20
Rain Water Pipes disconnected from the Sewer	9
Defective Ventilating Pipes Repaired ...	7
House Drains Smoke Tested	35

W.C. Accommodation.

Insufficient Sanitary Convenience ...	3
Defective Urinals	7
Midden Privies Abolished and W.C's Substituted	35
Defective W.C's Repaired	15
Decomposing Pools Abolished	14

Miscellaneous.

Accumulations of Manure	41
Insanitary Cowsheds	2
Yards Repaved after the Service of Statutory Notices	30
Nuisances from Fat Melting	1
Defective Manure Bins Repaired ...	5
Sanitary Ash Bins Supplied	35
Defective Eave Spouts and Fall Pipes Repaired	38
Accumulations of Offal in Slaughter Houses	15
Dirty Slaughter Houses	2
Dirty Bake Offices	16
Overcrowding	4
Smoke Nuisances	2

Insanitary Stables	7
Defective Roofs	5
Damp Walls	6
Nuisances from Fowls	19
Other Nuisances	79

COURT YARDS REPAVED.

Rudkin's Yard.
Taylor's Court.
North End Yard.
Gibson's Yard.
Hildon's Yard.
Gazley's Yard.
Gray's Yard.
Shakespeare's Yard.
Bennett's Yard.

YARDS RE-DRAINED.

Brown's Yard.
7 to 10, Valinger's Road.
Half Moon Yard.
East Street.

PREMISES REQUIRING INSPECTION.

The number of registered, licensed and other premises requiring inspection as shewn in the following table, viz:—

Slaughter Houses	16
Bone Boilers and Fat Melters	3
Workshops and Factories	149
Bake Houses	51
Cow Sheds	21
Milk Shops	42
Marine Store Dealers	2
Fellmongers	2
Horse Slaughterers	2

SITUATION OF SLAUGHTER HOUSES.

Lift's Yard, Norfolk Street.
Paradise Lane (2).
Softley's Yard, Broad Street.
Union Lane.
High Street.
Nar Bank, Southgate Street.
London Road.
Back of Highgate House, Highgate.
Hardwick Road.
Littleport Street.
Windsor Road.
Norfolk Street (2).
Chapel Street.
Nar Bank, Wisbech Road.

HORSE SLAUGHTERERS.

Wisbech Road.
Highgate.

The slaughter houses have been frequently visited, and with but few exceptions were found to be clean and in good order.

Slaughter houses in Southgate Street, Highgate, Nar Bank, Wisbech Road and Hardwick Road have been much improved during the year.

Action was taken against one occupier, under the slaughter house bye laws, for not keeping his premises clean and the non-removal of offal, he was fined 10/- and 5/6 costs for each offence.

Six beast carcases were found on slaughter to be diseased, as against twenty four last year; four were totally destroyed, two the forequarters and viscera.

There has been a decrease in the number of diseased carcases this year, and this is no doubt owing to the action taken by the Butchers' Association in deciding to insure only ox beasts, considerably fewer milch cows are now slaughtered in the borough.

INSPECTIONS.

One thousand four hundred inspections of slaughter houses and horse slaughtering premises were made, one application for renewal of slaughter house license was granted.

FORFEITED MEAT.

Jan. 13th,	Carcase of	Beef,	Gen.	Tuberculosis
March 3rd	,,	,,	,,	,,
,, 18th	,,	,,	,,	,,
April 6th	,,	,,	,,	,,
Oct. 13th	,,	,,	Local	Tuberculosis
Dec. 9th	,,	,,	,,	,,

Three lots of fish were seized.

FACTORY AND WORKSHOPS.

There are one hundred and twenty eight workshops, and seventy two factories registered in the borough, which have been inspected during the year.

The following is a list of insanitary conditions found, viz:—

Overcrowding	2
Dirty Workshops	10
Insanitary Conveniences	4
Insufficient Ventilation	3
Stables Under Workshops	1

Four intimations from H.M. Inspector of Factories have been received of the opening of workshops in the borough.

In a large number of workshops, Sec. 3 (4) of the Workshops Act is not complied with, and the attention of the occupiers has been called to this matter.

BAKE HOUSES.

There are fifty one bake houses in the borough. The following is a list of insanitary conditions found on inspection, viz :--

Defective W.C's	3
Defective Paving	4
Insufficient Ventilation	1
Dirty Walls	16
Drain opening in Bake House	2

COW SHEDS AND DAIRIES.

Sixty three cow sheds and dairies have been inspected at various times during the year and mostly found to be clean and in good order.

INFECTIOUS DISEASES.

The instructions of the Medical Officer of Health are carried out in respect to these diseases, the drains and sanitary appliances are examined on the premises whereon these diseases occur.

Rooms Disinfected	92
No. of Articles Treated at the Disinfector	738
No. of Vehicles	7

PORT SANITARY.

During the year ending December, 1903, one hundred and seventy eight ships were inspected, viz:—

Foreign Steamers	50
Foreign Sailing Ships	27
British Coasting Ships	14
British Coasting Steamers	20
Canal Boats	42
Fishing Vessels	25
	178

The forecastles and deck houses of twenty two ships were found to be in a dirty condition, viz:—

British	5
Foreign	14
Fishing Vessels and Canal Boats ...	3
	22

Attention has been given to the inspection of ships coming from infected ports.

PORT OF KING'S LYNN.

	No. Inspected.	No. Reported Defective.	No. of Orders Issued.
FOREIGN—			
Steamers ...	50	5	5
Sailing ...	27	9	9
Fishing ...	0	0	0
Total ...	77	14	14
COASTWISE—			
Steamers ...	20	0	0
Sailing ...	14	5	5
Fishing ...	25	3	3
Total ...	59	8	8