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THE
ANNUAL REPORT
MADE TO THE
URBAN SANITARY AUTHORITY
OF THE
Borough of Lowestoft,
FOR THE YEAR
1898,

BY
J. E. O'CONNOR, M.B.; D.P.H. Cantab.,

*Medical Officer of Health to the Borough and Port; and
Physician to the Lowestoft Isolation Hospital.*

INCLUDING A
METEOROLOGICAL REPORT,

BY
S. H. MILLER, F. R. Met. Soc.

LOWESTOFT :
FLOOD AND SON, BOROUGH PRINTING, STATIONERY, AND BOOKBINDING WORKS,
THE GROVE.

SANITARY COMMITTEE.

CHAS. V. FRY, Esq., *Mayor.*

MR. ALDERMAN J. BECKETT, *Chairman.*

Aldermen :

A. ADAMS

E. TUTTLE

W. MOBBS

W. YOUNGMAN

Councillors :

H. R. BOARDLEY

J. GILL

A. B. CAPPS

W. F. RICE

H. H. COPEMAN

J. SMITH

STATISTICAL SUMMARY.

Area of the Borough	...	...	(acres)	2,306
Population	...	...	...	26,061
Birth Rate	...	...	...	33.1
„ „ (for England and Wales)	...	...	...	29.4
Death Rate (corrected)	...	...	...	16.9
„ „ (for England and Wales)	...	...	...	17.6
Rate of Infantile Mortality (per 1,000 births)	...	...	...	184
„ „ „ (England and Wales)	...	...	...	161
Zymotic Death Rate	...	...	...	3.26
„ „ „ (England and Wales)	...	...	...	2.22
Mean Temperature	...	...	...	50.1°F.
Rainfall	...	...	... (inches)	22.52

***To the Mayor, Aldermen, and Councillors of the
Borough of Lowestoft.***

GENTLEMEN,

In submitting, herewith, in accordance with the regulations of the Local Government Board, my Second Annual Report on the sanitary conditions and vital statistics of your Borough, I would direct your especial attention to my remarks on the sickness which has prevailed during the past year, and to the advice which I tender with a view to reducing or preventing the prevalence of some of the Zymotic diseases.

I am compelled to speak somewhat bluntly with regard to certain insanitary conditions which indeed you are gradually eliminating; but which demand prompt and strenuous action if you are to successfully compete with several of those seaside resorts whose Corporations have long since realised the necessity of spending vast sums in sanitary reform.

In view of the retrogressive feature of recent Parliamentary legislation as to Vaccination, I have deemed it expedient to advert to the disastrous consequences which will certainly accrue should a large proportion of your population refrain from having their children immunised against Small-pox.

I am of opinion that it is incumbent on all Sanitary Authorities to take an active part in the laudable effort which is being made, on the initiative of Sir R. Thorne Thorne, to educate the public as to the infectious nature of Tuberculosis. I have, however, in connection with this disease, to direct attention to what is undoubtedly the most favourable feature of this report, viz : the comparative immunity from Consumption enjoyed by a large percentage of the residents in your Borough, and the marked benefits which frequently result, especially in the earlier stages of the malady, from a change to this locality. The latter fact, considered in conjunction with the Meteorological Reports of MR. S. H. MILLER, leads me to believe that the district is a

suitable one for the erection of open-air Sanatoria for the treatment of Phthisical patients.

I express my sense of obligation to DR. NIVEN, of Manchester, for having given me permission to copy and utilise leaflets, which he has issued in connection with the executive sanitary work of that city. I also thank many of my professional colleagues for frequent valuable advice and assistance in the discharge of my official duties. I would, however, point out that these duties would, in many respects, be greatly facilitated if this county possessed a Medical Officer. If comprehensive sanitary administration is desired for the County as a whole, such an appointment should receive the serious consideration of your County Council.

I have the honour to be, Gentlemen,

Your obedient servant,

JOHN EDWARD O'CONNOR.

1 SURREY STREET,

LOWESTOFT,

20th February, 1899.

Vital Statistics.

Population.

To insure statistical accuracy in reports of this nature, it is primarily important that rates should be calculated on the basis of a correctly estimated population. In Lowestoft there are, however, so many conflicting factors to be considered in attempting such an estimation, that I think it most expedient to simply assume that the rate of increase in the population during the last intercensal period, has been since maintained. Based on such a hypothesis the population at the middle of 1898 would be 26,029. In my calculation of rates for 1897, I retained the number **26,061**, which was used by my predecessor during the early part of that year. I again retain the latter figure, which differs but little from the former as a basis for my 1898 statistics, and in my estimate I take no account of a somewhat uncertain percentage of the sea-faring population.* To compensate for this exclusion of a small proportion of the population, deaths at sea are relegated solely to the "Port" and are not included in estimating the Borough rate of Mortality. By thus

**Vide* Dr. Wynne's report for 1891.

dividing the population, I can calculate the borough rate on a figure which closely approximates to that which I have obtained by the method employed by the Registrar General. Over-estimated populations not alone vitiate statistics, but by leading to the publication of low sickness and deaths rates, generate a false feeling of security and tend somewhat to retard sanitary progress

The population is of course enormously increased in summer; and it would, if only for the sake of comparison with other Health Resorts, be expedient to obtain a rough estimate of the average number and duration of stay of visitors, by means of forms which could conveniently be left at each house and collected at the expiration of the season. Collateral information could be obtained from the Great Eastern Railway Company.

The actual increase or decrease in the number of inhabited houses for each ward during the years 1897 and 1898, was as follows :

				1897.	1898.
North Ward	...	...	...	54	48
South	„	...	...	15	22
East	„	...	...	-9	44
West	„	...	...	19	11
Total increase				97	125

It is most desirable, for many reasons, that we should possess a more accurate knowledge of the numbers and constituent elements of the population, and for this purpose a quinquennial census would be of unquestionable advantage.

BOROUGH OF LOWESTOFT.

Return to Dr. J. E. O'CONNOR, M.B., Medical Officer of Health, of Number of Houses, etc.,
in the Borough.

Name of Ward.	Number of Houses, etc.	Number of Cottages £7 10s. and under.	Total.	Inhabited.	Uninhabited.	Total.
NORTH ...	745	1090	1835	1817	18	1835
SOUTH ..	1011	643	1654	1601	53	1654
EAST ...	835	563	1398	1373	25	1398
WEST ...	911	858	1769	1735	34	1769
	3502	3154	6656	6526	130	6656

December, 1898.

F. GAGE, *Rate Collector*,
102, High Street, Lowestoft.

On the Marriage and Birth Rates.

During the year **246 marriages** took place within the borough, the corrected marriage rate being 18·8 per 1000 per annum. In 11 marriages both contracting parties resided outside the borough. The number of marriages during 1897 and 1896 was respectively 203 and 200. The average number for the preceding ten years was 189. The rate for 1898 is one of the highest ever recorded in the borough.

The total number of **births** registered was **864**, which is equivalent to a rate of **33·1 per 1000 persons per annum**. Their quarterly distribution as to sex, legitimacy, and rate, is given in the accompanying table.

Period.	Legitimate.		Illegitimate.		Total Births.	Rate per 1000.
	Male.	Female.	Male.	Female.		
1st Quarter	109	97	5	3	214	32·80
2nd Quarter	95	100	1	3	199	30·54
3rd Quarter	107	112	4	2	225	34·53
4th Quarter	115	101	5	5	226	34·68
Total	426	410	15	13	864	33·1

In my last report I alluded to the participation of Lowestoft in the general decline of the Birth Rate, and published the lowest rate ever recorded in the borough, which was 31·08. The rate this year of 33·1 closely approximates to the average since 1890. During the ten years prior to the latter date it averaged nearly 37, and in 1884 it was 39.

It is satisfactory to note that the Birth Rate is considerably higher than that of England and Wales, which is 29·4—lower than any other year on record. Twenty-eight of the births (*i.e.*, 3·2 per cent.) were illegitimate.

Birth Rate since 1889.

England and Wales.			Lowestoft.	
1889	...	31'1	...	36'2
1890	...	30'2	...	33'9
1891	...	31'4	...	33'0
1892	...	30'5	...	31'7
1893	...	30'8	...	33'0
1894	...	29'6	...	33'7
1895	...	30'4	..	33'8
1896	...	29'7	...	33'8
1897	...	29'7	...	31'0
1898	..	29'4	...	33'1
Mean			...	33'3

General Mortality Statistics.

Four hundred and forty-nine deaths were registered as having occurred within the borough during 1898. Two hundred and forty-nine were males and two hundred were females, the difference in the incidence of mortality in the two sexes being due chiefly to the relatively large number of deaths which occurred among male infants. By excluding 24 deaths which occurred among visitors and 2 deaths which are accredited to the "Port"; and again by including 19 deaths which took place among Lowestoft poor within a year of their arrival at the Oulton Workhouse, we obtain a "corrected" total of 442 and a **corrected death rate of 16'95 per 1000 per annum.** This rate which is slightly in excess of the average for the past ten years, and which, as is shewn in the following table, compares somewhat unfavorably with those published for 1896 and 1897, is the local expression of a slight increase in the rate of mortality throughout the country generally.

Death rates since 1889 :—

		England & Wales.			Lowestoft.	
1889	18.2	...	...	15.2
1890	19.5	...	...	16.1
1891	20.2	...	...	16.2
1892	19.0	...	...	16.8
1893	19.2	...	...	18.7
1894	16.6	...	...	12.9
1895	18.7	...	...	20.6
1896	17.1	...	...	12.7
1897	17.4	...	...	15.2
1898	17.6	...	...	16.9
Mean 1889-98		...	18.3	...	...	16.1

The age distribution of the 449 deaths which occurred within the borough was as follows :—

			1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Totals.
Under 1 year	...	...	37	40	35	47	159
1 and under 5	...	...	9	11	15	14	49
5 „ „ 15	...	...	5	1	2	2	10
15 „ „ 25	...	...	3	1	4	5	13
25 „ „ 65	...	...	35	31	25	24	115
65 and over	...	...	41	18	18	26	103
Totals	...	...	130	102	99	118	449

A comparison with the returns of previous years will show that the mortality rate among adolescents is the lowest ever recorded, and that were it not for a high death rate among infants, the rate for 1898 would be an exceptionally low one. Of 208 deaths which occurred under the age of five years, 41 were due to Summer Diarrhœa, and 27 to Whooping Cough. 159 of these 208 deaths were in infants under one year, the

rate of **Infantile Mortality** per thousand births being 184. Only once during the past twenty-four years has this rate been exceeded, viz. in 1893, when it was 220. It was equalled in 1895, and the rates for 1896 and 1897 were respectively 124 and 153.

In the accompanying table, deaths are apportioned according to the locality in which they occurred; the populations are only approximate, and no attempt has been made to correct the Ward death rates, inasmuch as data are not forthcoming as to precise locality to which deaths occurring outside the Borough should be accredited. The most marked result of correction would be a diminution in the rate of mortality for the South Ward

		Population.	Total Deaths	Gross Death Rate.	Rate for 5 years, 1893-7 inclusive.
North Ward...	...	7,450	146	19.5	18.2
South „ ...	...	6,000	88	14.6	14.2
East „ ...	...	5,211	88	16.8	13.4
West „ ...	...	7,400	99	13.3	16.7
Totals	...	26,061	421		

It is satisfactory to note a considerable fall in the death rate of the West Ward, which, for the first time, is below that of each of the other wards.

In addition to the above, there were 4 deaths at the Isolation Hospital, and 22 at the General Hospital.

There were 103 deaths among persons of 65 and upwards. Nearly half of these deaths were in the first quarter of the year.

It is important that special consideration should be bestowed upon the **Zymotic Deaths**, and that their rates, both for individual diseases and collectively, should be contrasted from year to year with those of the country generally. This comparison for 1898 is made in the table on page 14. The information it conveys is, on the whole, not very

gratifying, for it shews that our death rate from the seven principal Zymotic Diseases has exceeded that of not only the country generally, but of the 33 great towns; and, further, that this excess is due to a comparatively high mortality from Diarrhœa, Enteric Fever, and Whooping Cough. Its favourable aspects are, however, apparent in the columns headed Smallpox, Measles, Scarlet Fever, and Diphtheria.

The following table gives the total number of deaths which have occurred from the different Zymotic Diseases, together with the respective Zymotic death rates.

Disease.	Total.	Rate per 1,000 per annum.
Diarrhœa... ..	43	1.65
Whooping Cough ...	28	1.11
Influenza... ..	15	0.57
Enteric Fever	6	0.22
Diphtheria	3	0.11
Puerperal Fever ...	3	0.11
Scarlet Fever	2	0.07
Erysipelas	1	0.03
Measles	—	—
TOTALS	101	3.87

The rate of Mortality (3.26) from the Seven Principal Zymotic Diseases has only once been exceeded since 1879, viz. :—in 1895, when owing to the prevalence of Whooping Cough, Diarrhœa, and especially of Measles, it was 6.59. The Zymotic Death Rates in 1896 and 1897 were respectively 1.52 and 1.85. The average for the past ten years has been 2.11. The average for England and Wales, for the same period, has been 1.98.

Annual Death Rates per 1000 from All Causes, and from several Zymotic Diseases,
during the year 1898.

	All Causes	Principal Zymotic Diseases	Small-Pox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diar-rhoea	Deaths under 1 Year per 1000 Births
England and Wales ...	17.6	2.22	0.01	0.41	0.11	0.24	0.31	0.18	0.96	161
33 Great Towns ...	19.0	2.85	0.00	0.56	0.14	0.31	0.42	0.20	1.21	178
67 Other Large Towns ...	17.2	2.41	0.05	0.41	0.10	0.28	0.27	0.21	1.09	173
England and Wales } less the 100 towns	16.7	1.75	0.00	0.31	0.09	0.18	0.25	0.17	0.75	145
Lowestoft ...	16.9	3.26	0.00	0.00	0.07	0.11	1.11	0.22	1.65	184

It will be seen that although Lowestoft enjoys, as a rule, a much lower death rate than that which prevails throughout the country generally, the rate of mortality from Zymotic Diseases, *i.e.*:—those diseases which are most amenable to preventive measures, is on the whole too high, especially when we consider the advantages conferred by geological and meteorological conditions. Indeed, were it not for the latter, and for the absence of the overcrowding, which prevails in large towns, and for the healthy avocation of a large proportion of the population, the Zymotic Death Rate would be very much higher than it is. Pollution of subsoil by excremental organic matter through the medium of middens is, *per se*, sufficient to account for a high Zymotic Mortality and Morbidity. There are also remediable conditions with which you are dealing, I fear, too slowly. Much has been done and much is about to be done; but an enormous amount of sanitary work must be done if you will make this town the ideal health resort that it should be.

Excluding Infantile and Zymotic Deaths, I doubt if there be a borough in the country which can boast of a much lower general rate of mortality, and I again direct attention to the comparatively low death rate from **Phthisis**, which is 0.49, by far the lowest ever recorded. The mean Phthisical death rate for ten years has been 0.88.

Information regarding the 1898 Phthisical death rates of the other sea-side resorts is not yet to hand; but, judging by former returns, I shall indeed be surprised if any one of them is so low as that of Lowestoft.

Two of the deaths from Consumption occurred among visitors, so that our corrected total is 11, and the corrected Phthisical death rate is only **0.42**, an astonishingly low figure, and one which should go far to commend Lowestoft as a resort for Consumptives. The locality is already earning a reputation in this respect. During five years only six deaths have occurred among a large number of Phthisical visitors. A dry sandy subsoil, a low relative humidity, and the lowest rainfall in England, combine to constitute, what is for this country, an exceptionally dry climate. Add to this a com-

paratively long duration of bright unclouded sunshine, especially during the autumn and early winter, and we have a series of conditions known to be inimical to the proliferation of the specific organism which causes the disease; conditions which permit of patients carrying out their physicians' instructions, by leading an open air life. And here it is relevant to state that, as shewn by Mr. Glaisher's report on the Meteorology of England, the three towns which enjoyed the most equable temperature during the last quarter of the year were Ventnor, Eastbourne, and Lowestoft. As shewn by relative humidity and rainfall, Lowestoft was the driest of these places.

Eight of the deaths from Consumption occurred in the North Ward, where there is a stratum of boulder clay. Excluding the two deaths among visitors, there was only one death in each of the other wards, and these wards have for years enjoyed a higher degree of exemption.

I had occasion in my last Annual Report to allude to the infectious nature of Consumption and to advise that precautions should invariably be taken to prevent its spread, especially among members of the same family. The fact that Lowestoft enjoys a low Phthisical mortality in no wise lessens the necessity of this fact being clearly brought home to its inhabitants. Children are so commonly infected by their parents that the disease has erroneously come to be regarded as hereditary. The recent influential movement having for its object the partial suppression of the malady, has brought home to those engaged in the practice of Preventive Medicine the necessity of arousing the public to a proper appreciation of the infectious nature of Consumption and the simple precautions which should invariably be taken to inhibit its spread. I touched, in my '97 Report, on the advisability of adding the disease to those which are compulsorily notifiable, but the Local Government Board has so far refused to sanction this procedure, and would rely rather on the education of the public. A form which I append to this report has been issued with this latter object, and is sent to any house which I know to be infected. Public meetings will, I trust, be held here as elsewhere and some good will, I hope, accrue. If the public, however, are to be educated it must be

begun in the schools, and it will be years before the bulk of Phthisical patients will take all necessary precautions. Should the Local Government Board consent to the voluntary notification of the disease by physicians (the same fee being paid as for other notifications) I would advise you to avail yourselves of this permission.

I have during the year made several bacteriological examinations of suspicious expectoration, and I am prepared to further examine any specimen which physicians in this town may send me. Should the expectoration prove tubercular, I could then take precautions with a view to preventing the spread of the disease.

The deaths from other pulmonary affections (Bronchitis, Pneumonia and Pleurisy) number 64, the majority of which occurred among infants. This figure is considerably above the average. I am, however, disposed to regard not a few of these deaths as having been caused by hereditary syphilitic affection of the lung.

Six deaths were certified as having been caused by **Syphilis**, and this disease is probably responsible for some of the "Congenital Debility" and "Infantile Atrophy" returns. There were nine deaths from Syphilis in 1897. So long as no effort is made by the State to stamp out this disease, or, at least, to lessen its prevalence, we must regularly expect to find the name included on the list of infantile deaths.

There were 14 deaths from **Tubercular Diseases** other than Phthisis; but doubtless here again many of the "Congenital Debility," "Infantile Atrophy," and "Marasmus" deaths should be added to this category. These 14 deaths have, no doubt, been caused chiefly by the consumption of un-scalded or un-boiled tubercular milk. We are now, of course, looking for improved legislation on this matter.

Twenty deaths were caused by Malignant Disease (**Cancer**). The average number of deaths from this cause during the past

ten years was 21.5 per annum, the rate of mortality being about 0.83, a figure which differs but little from the average for England and Wales during the same period. Our death rate from Cancer during the past three years has been 0.60, so that the disease does not exhibit the steady tendency to increase in prevalence which has obtained throughout the country generally.

The causes and distribution of deaths in the Borough are given in the Appendix, Table A. Those which are entered under the heading "All other Diseases" include :—

Congenital Debility and Infantile Atrophy ...	44
Old Age	24
Malignant Disease	20
Diseases of the Digestive System	17
Tuberculosis (excluding Phthisis)	14
Diseases of the Kidneys and Bladder	14
Apoplexy	13
Convulsions	12
Diseases of the Nervous System	10
Premature Birth	9
Syphilis	6

The deaths from **Diseases of the Heart** number 43. The same number was recorded in 1897, the average for the preceding ten years being 28 per annum.

It is significant that, notwithstanding a fairly high rate of mortality (1.65) from Cardiac Diseases, only one death was recorded from Rheumatic Fever.

Morbidity.

During 1898 two hundred and fourteen cases of notifiable infectious diseases came under observation. Their distribution as to locality is shewn in the appendix, Table B. Their quarterly distribution was as follows:—

1st Quarter	...	...	...	80
2nd „	..	...	...	31
3rd „	...	...	...	40
4th „	...	...	...	63

The manner in which the above cases came to my knowledge was as follows:—

200 were notified by physicians in attendance.

2 „ „ parents or other responsible persons.

2 „ „ principal teachers of schools.

5 „ „ school attendance officer.

5 I discovered in the course of investigations instituted chiefly as a result of information given to me by the latter gentleman.

I prefix my remarks on the various infectious diseases which occurred during the year by the accompanying analysis of cases reported since the adoption of the Notification Act, in February, 1890.

	1890	1891	1892	1893	1894	1895	1896	1897	1898	Aver.
Scarlet Fever	3	8	32	87	56	19	55	157	53	52
Diphtheria ...	10	5	62	112	65	46	46	29	15	43
Typhoid Fever	64	30	21	63	31	41	36	44	46	41
Puerperal Fever	5	4	5	2	4	2	4	1	3	3
Erysipelas ...	27	17	14	27	15	16	17	17	14	18
Totals ...	109	64	104	291	171	124	158	248	131	

The most significant features in connection with the above table are (1) the systematic prevalence of Typhoid Fever, and (2) the maintenance of a gradual decline in the annual number of notified cases of Diphtheria since the epidemic of 1893. To both of these facts I had occasion to allude in my last Annual Report.

BOROUGH OF LOWESTOFT.

Return of the number of cases of Infectious Disease reported to the Medical Officer of Health during the year 1898, and of deaths from the diseases notified.

			Cases notified in 1898.	Deaths registered in 1898.
Small-pox	...	...
Scarlet Fever	...	...	53	2
Diphtheria	...	...	15	3
Membranous Croup	...	...
Typhus Fever	...	...
Enteric or Typhoid Fever	...	...	46	6*
Continued Fever	...	...
Relapsing Fever	...	...
Puerperal Fever	...	...	3	3
Cholera	...	...
Erysipelas	...	...	14	1
Measles	...	...	83	—

* Including two "Port" Cases.

Typhoid Fever.

Although I have endeavoured to seek and trace out the source of infection in every case of Enteric Fever, I should not care to be too dogmatic in my statements as to the cause of the disease in any particular instance. The large majority of the **46 cases** which came under my observation were associated with obvious defective sanitation, generally in the form of a privy-midden, a blocked or ill-ventilated drain, or a road gully, from whence arose an offensive effluvium. I am convinced that five of the cases were caused by the disturbance of sub-soil associated with removal of **privy-middens**. Three of these

occurred in a house in the North Ward, in a locality which had long been associated with the disease, and where one of these pest-houses adjoined each back entrance. They were notified on 28th January, and on visiting the house, I found that a baby had died of Bronchitis (?). The conversion of the midden into a W.C. had been commenced about a fortnight previously. The three patients—a mother and two children—were removed to the Isolation Hospital, where one, the mother, died. The histories of two other cases—one in the North and one in the West Ward—were similar ; but fortunately, though both were severe, neither proved fatal. In the following table I have relegated these cases to the column headed “Disturbance of Polluted Subsoil.” They are interesting as serving to corroborate the mass of evidence which has for years accumulated to show that the retention of excremental filth, in proximity to a dwelling place is, in Lowestoft as elsewhere, a fertile cause of Enteric Fever. Excluding three cases which were respectively imported from Devonshire, Newcastle, and Norwich, the table broadly indicates the distribution of 43 cases which occurred during 1898 :—

Ward.	Houses with Privy.	Houses with Hand Flush Closet.	Houses with Cistern flushed W.C.	Disturbance of Polluted Sub-soil.	Totals.
North - -	8	1	6	4	19
South - -	3		5		8
East - -	1		2		3
West - -	3	3	6	1	13
	15	4	19	5	43

Analysing the cases entered in the consecutive columns of the above table I find the following facts :—

Houses with Privy :—In one the contents of privy soaked on to the yard, and an inmate of the house had had a septic throat which was attributed to this defect. In a second the drains were blocked so that the disease could be more reasonably attributed to this cause than to the existence of a midden. In three others the sanitation was in many respects obviously defective. In not one was it modern or perfect.

Houses with Hand-flush W.C. :—In three, these structures were in a most uncleanly condition, as is usual, for people will not often trouble to flush them. One in the North Ward had a road gully close by; and during the present year a case occurred in the neighbouring house where the sanitation was good, but where complaints were made as to the smell from the same gully. One of the above cases may have been caused by the consumption of infected shell-fish, though I have not sufficient evidence to regard this latter as a factor in the etiology of the disease in this town.

Houses with Cistern-flushed W.C. :—In six there was obvious defective sanitation. One had a road gully opposite the front door, about which the inmates complained. Another case was said to have been contracted elsewhere. In several of the houses the sanitation was above ground perfect and the drains were comparatively new. In the remainder the general sanitary arrangements, though not obviously defective, were old and of a type that an advanced sanitarian would like to condemn.

The seasonal distribution of the disease was as follows :—

1st Quarter	...	...	...	10 cases
2nd „	...	...	...	7 „
3rd „	...	...	...	7 „
4th „	...	...	...	22 „
Total	...	...	...	46 „

Twenty-seven of the cases occurred during the last four months of the year. Four cases terminated fatally. In three cases the diagnosis was doubtful; but against these, there were several unrecorded cases which may have been Typhoid.

I am glad that you have authorised me to employ Widal's Test as an aid to diagnosis, as in the absence of a trained nurse or of some one who can keep records of temperature and give an intelligent description of the case, the clinical recognition of the disease is not infrequently fraught with no little difficulty.

If the following sanitary reforms were effected I am convinced that the average of 41 cases per annum would be reduced something like tenfold :—

- (1.) Removal of all privy-middens, (disinfectants being freely used during removal).
- (2.) Effective sewer ventilation, by shafts.
- (3.) Systematic inspection of houses, followed in every case by such sanitary improvements as may appear to be necessary.

Infantile Diarrhœa.

The prevalence of this disease was, as usual, coincident and increased *pari passu* with a rise in the four-foot earth temperature beyond 56° F. Inasmuch as owing to a prolongation of warm weather, and meteorological conditions interfering with terrestrial radiation, the four-foot earth thermometer was maintained above the "critical temperature" exceptionally late in the Autumn, so also the incidence of mortality from Infantile Diarrhœa has been exceptionally severe. 41 infants and 2 old people—for the disease does attack the aged—making a total of 43, succumbed to the disease.

It is interesting to note that when Summer Diarrhœa was prevalent, a number of deaths were certified as having been caused by "Marasmus," "Debility," "Atrophy," "Dyspepsia," "Convulsions," and so forth. It is exceedingly probable that many, if not most, of these deaths were due to the infection which generally produces as a symptom "Diarrhœa," for it is known that the disease can run its course from first to last without any diarrhoea whatever. Consequently I am disposed to look upon the returns as furnishing an under-estimate of the actual number of deaths. Unfortunately, too, in about two thirds of the returns the duration of the disease has not been stated; and this represents approximately the proportion of death certificates, for all diseases, which are either incompletely filled in or not in conformity with the current "Nomenclature of Diseases."

Then again, statistics of "Diarrhœa" vary from year to year owing to different Medical Officers putting a more or less comprehensive interpretation on the term which, as written on the

form "A" supplied by the Local Government Board, should be either rendered explicit or abolished.

Diphtheria.

One of the most satisfactory features of this section of my report is the fact that the gradual reduction in the number of Diphtheria cases, notified each winter since 1893, is still being maintained. During 1898 there have been only 15 cases, three of which proved fatal.

The following table, giving the number of cases and deaths since 1890, shews that the case mortality has on the whole declined since 1894.

	1890	1891	1892	1893	1894	1895	1896	1897	1898	TOTAL
Cases	10	5	62	112	65	46	46	29	15	390
Deaths	3	2	15	18	18	12	10	3	3	84
Case Mortality per cent.	30	40	24	16	29	26	21	10	20	21

In not one of the certificates of fatal cases occurring during the past three years, is there a record of the administration of anti-diphtheritic serum, and in the Isolation Hospital where it has been regularly administered, not a single death has occurred during that period.

Disinfection and house isolation have been regularly carried out; but owing to limited accommodation I could only admit 2 of the 15 cases to the Isolation Hospital. One of these cases occurred in a dairy, the proprietor of which readily agreed to discontinue the sale of milk for three clear days after the completion of disinfection, and the house was subsequently kept under observation.

I continue to make bacteriological examinations of suspected cases, and I satisfied myself as to the absence of the specific germ before discharging patients from hospital. I am disposed to attribute the vast majority of the cases to defective sewer ventilation, the sewer gas which acted probably as a predisposing cause, having been inhaled near the road gulleys or having gained

admission to the houses by forcing the interceptors. Several of the houses possessed these pestiferous privy middens, but I am not so inclined to attribute the cases to this nuisance as to drainage defects. One of the cases was probably imported from London, and one I attributed to the deposit of night-soil on adjacent land.

The seasonal distribution of the disease is shown in the following table. The West Ward has been the stronghold of the disease since 1893.

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	TOTAL
North Ward... ..	1				1
South Ward	3			2	5
East Ward				3	3
West Ward	3	1	2		6
	7	1	2	5	15

Scarlet Fever.

Although there were only two deaths from Scarlet Fever, the disease, owing chiefly to its prolonged infectivity and liability to assume a severe type, especially in very young children, gave me as much anxiety and demanded as much attention as perhaps all other notifiable diseases combined. The cases which I know to have occurred during each quarter of the year numbered respectively 16, 9, 7 and 21, making a total of 53, a figure which offers very favourable comparison with the 157 cases of 1897. In the latter year the disease was epidemic as was the case in many towns throughout England, but in none—to the best of my knowledge—did its epidemic prevalence cease earlier than in Lowestoft, a fact which I attribute to my having controlled it with open schools; and during the past year I again refrained from closing a single school to check this disease, though I had occasion to visit several. The disease, as I last year pointed out,

is one which lends itself to preventive measures which can be easier carried out with open schools than with closed. In this respect it differs from Measles, Whooping Cough and Rubella.

As appears to be the almost invariable rule, August bank-holiday left its imported infection. The resultant cases were immediately isolated, and the disease prevented from spreading. I did not, however, expect it to be very prevalent last summer, and in the ordinary course we should expect a fairly high degree of exemption during the present year. Seventy-two per cent. of the cases were admitted to the Isolation Hospital.

Though several persons failed to notify cases, and were, I believe, guilty of deliberately concealing the disease, they were not technically offenders under the Infectious Diseases (Notification) Act. In one case, though the mother admitted knowledge of the real nature of the disease, the "head of the family" expressed ignorance on this point, so that as the Act stands no prosecution could be entered.

A case almost identical with the above came under my notice through the School Attendance Officer. The mother was a laundress, and on visiting the house I found the damp linen hung up to dry in the kitchen, when the patient was freely desquamating (peeling). I arrived in time to prevent the infection being despatched to five houses, with all of which I had to communicate in order that any linen sent previously should be boiled. I ordered the collection, disinfection, and delivery of the remaining linen. In another case the parents excused themselves on the ground that they believed the disease was "Measles." It seems a pity that the Notification Act is not made a little more comprehensive, as not one of these persons were guilty of a technical offence; not even the latter, although Measles is here notifiable.

In connection with these cases, I think it relevant to express the opinion that Public Health law should provide for the compulsory registration of laundresses, and that Local Authorities should be empowered to make Bye-Laws or Regulations for the special control of such businesses. Lowestoft possesses the finest Steam Laundry I have ever seen in such a town; but, as

is the case in most Boroughs, there are many small laundresses who, since they do not employ persons outside their own family, are not within the jurisdiction of the Factories and Workshops Acts. There should be some means provided for facilitating supervision and exercising control over such employment, especially as regards infectious diseases.

Touching this question of Public Health law in connection with infectious disease, I shall, in my next report, have to record cases of Scarlatina which were notified from a private boarding school. Several parents on becoming aware of the fact promptly removed their children, who had been exposed to infection, home to their dairies! There is no law in force by which a Medical Officer can prevent such insane behaviour.

Measles.

Eighty-three cases of Measles were reported, but all were of a mild description and no death from this cause was recorded. The type of the disease thus contrasts favourably with that which prevailed in 1895, when seventy-four cases proved fatal.

An important point to remember in connection with Measles is, that although it is usually in itself a mild affection, it commonly predisposes to other diseases which are accredited with a relatively high number of deaths. It was made notifiable in this district in March, 1896, and prevailed but slightly during that and the following year, twenty-four and eight cases being respectively recorded. Few towns in England escape an epidemic for much longer than three years, and it was only reasonable to expect a much larger number of cases than I have recorded during 1898. Such I know would have been the case were the diseases not notifiable.

Thirty-two of the cases occurred in February in a large private school where isolation was carried out most efficiently, and when no expense was spared in the thorough disinfection of the premises. In the month of July, when I was absent in Aldershot, nineteen cases were notified to my deputy, who, by his prompt action, succeeded in preventing the spread of the disease in two schools. It is worthy of note that Measles was the only disease notified during that month.

Rubella (German Measles.)

Rubella was somewhat prevalent in the North Ward early in December, and as several of the cases occurred among children attending the Church Road Board Schools, I had occasion to visit them twice with a view to arresting its spread. On my second visit, thanks to the vigilance of the principal teacher, I found at least one infectious child in attendance and forthwith advised its closure from the 15th December, a week before the Xmas vacation, till 7th January, the date on which the vacation expired. The closure had the desired effect in arresting the spread of the disease. About 30 cases came under my notice in various manners. Two were notified as Scarlet Fever and five as Measles. Three were notified by the parents. The remainder either came under my observation through the School Attendance Officer and the principal teachers of the Church Road and Clapham Road Schools, or were found in the course of some 35 visits which I paid with a view to detecting cases. Some of the cases were complicated with Pneumonia. The disease, in Lowestoft, appears to be of a severer type than I have seen elsewhere and in many instances very closely simulates Scarlet Fever, so closely that I have known it in different cases to deceive four experienced physicians. In 1897 a case was sent to the Isolation Hospital as Scarlet Fever, by two medical men. Sometimes the disease is very like Measles. Moreover parents often mistake Scarlet Fever for "German Measles," and this error has in several instances furnished them with a sufficient excuse for not notifying the former. I must re-iterate the opinion which I expressed in my 1897 report, that in a town where Scarlet Fever and Measles are both notifiable, Rubella should, for the reasons indicated above, most certainly be included.

Whooping Cough.

There were 28 deaths from Whooping Cough, twenty of which occurred during the months of May and June. In these months it was prevalent in the North, East and West Wards, but in so far as I could ascertain, the disease not being notifiable, it could not be associated with any particular school. As the South Ward has for some years enjoyed a high degree of exemption; and as in December, when the Committee met to

close the Church Road Schools for Rubella, the School Attendance Officer advised me that many children were absent through Whooping Cough from the Lovewell Road Schools, I considered it expedient to ask that the latter should also be closed.

A high mortality from Whooping Cough in any given year as a rule means comparative freedom from the disease during the year following. We may therefore reasonably expect a high degree of exemption during 1899.

This tendency is exhibited to a certain extent in the accompanying table of deaths since 1890, when the immunity of 1894 is very noticeable. :—

1890	1891	1892	1893	1894	1895	1896	1897	1898
11	3	1	44	1	16	17	7	28

There were fifteen deaths from **Influenza** which was prevalent in January and February, fourteen of the deaths being accredited to the first quarter of the year. The deaths from this cause since 1895 were as follows :—

1895	1896	1897	1898
30	1	7	15

Small-Pox.

Towards the close of the year, in conformation with my advice, you directed that I should institute inquiries with a view to determining the most suitable procurable site for a Small-pox Hospital. I am glad that this preliminary step has at length been taken ; for, in the light of the recent surrender by Parliament of scientific truth to the prejudice of the ill-informed, your population, like that of the country generally, is not unlikely to become increasingly susceptible to the ravages of an epidemic. Provision for the prompt removal and isolation of any imported case is essential ; but unless the public will recognise that the one competent adviser on this as on other matters of health is the physician, and until people are sufficiently shrewd and educated to be proof against the seductive eloquence of gentlemen whose political zeal exceeds their pathological knowledge, that epidemic with its disastrous vital and economic consequences is inevitable.

As your Medical Officer, and as one who has devoted no little time to the study of this question, I should be sadly and culpably wanting in my duty did I not advise you that as a Sanitary Authority, you should do all in your power to induce your townspeople to have their children vaccinated. Valid objections to the operation which could at one time be raised, owing to the want of aseptic precautions or to inoculation of various infections with the lymph, are in the light of recent improvements no longer tenable. You have had the evidence of Gloucester and of Sheffield, and of many other places before you, and now there is the experience of Middlesborough, which no intelligent unbiassed person can read without profit.

From the mass of interesting matter in the report of the Medical Officer of Health for that borough, I cull the following. The 105 children under 10 years, who were attacked are classified as follows :—

	Attacked.	Died.	Percentage of Deaths among those attacked.
Vaccinated ...	43	0	0.0
Unvaccinated ...	62	29	46.7

Since the protective value of primary vaccination usually passes off within ten years, the deaths among the vaccinated only occurred among persons over this age, and not one death took place among the completely re-vaccinated. The latter fact is in concordance with the experience of Germany, where re-vaccination is enforced and Small-pox is almost unknown.

I deem it expedient to direct your attention to the above facts, not only because they are recent and reiterate the evidence of Sheffield, London, Dewsbury, Warrington, and Gloucester; but because Lowestoft has not been behind-hand in furnishing its quatum of conscientious objectors. Conscientious; but mistaken people, some of whom, perhaps too soon will realise that the certificates so easily obtained were their children's death-warrants.

Sixty-one parents applied for certificates in respect of seventy children, and seventy shillings were paid. Fortunately for some of the children, many of the parents omitted to present their certificate to the Vaccination Officer within the specified seven days.

From the accompanying information supplied by the Vaccination Officer, I am enabled to approximately estimate the percentage of children in the borough* under nine years of age who are unvaccinated.

**Vaccination Returns for Eight years ending
December, 1898.**

	Births.	Vaccinations.	Deaths.	Not accounted for.
1891	624	540	47	37
1892	617	529	53	35
1893	644	515	79	50
1894	669	559	46	64
1895	688	516	77	95
1896	717	550	62	105
1897	682	501	60	121
1898	714	298	84	332
Total ...	5,355	4,008	508	839

The number of children marked as not accounted for, includes those who have left the town, and addresses that cannot be found, and also postponements.

The number of Conscientious Objections received by me for the whole of the Lowestoft Sub-District, comprised of the Parishes of Lowestoft, Oulton, Blundeston, Flixton, Corton and Gunton, are 21.

(Signed), WILLIAM D. HAYES,
Vaccination Officer.

*Excluding Kirkley.

The deaths referred to in the above table occurred in unvaccinated children. By deducting them from the births, we find that of 4,747 children liable to be vaccinated, 4,008, *i.e.*, 85 per cent. had the operation performed, the remaining **15 per cent. being unvaccinated.** I surmise that the number of unvaccinated children who left the town has in a large measure been compensated by importations. As regards the Parish of Kirkley—*i.e.*, the greater part of the South Ward—I have no reason to believe that the percentage differs very materially.

The most noticeable feature displayed in the above table is the remarkable falling off in the number of vaccinations during 1898. Last year the majority of parents denied their children the benefits of vaccination.

In addition it must be remembered that, in the great bulk of the population over ten years of age, the immunity conferred by vaccination has so far diminished, as in many instances to place them in a position no better than that enjoyed by unvaccinated persons.

Consider the above in conjunction with my remarks and those of my predecessors, on the sanitary condition of the town, and you will realise the real necessity of efficient provision for isolation ; for although vaccination, in the absence of isolation, is the only reliable insurance for the individual, good sanitation is the one defence on which the susceptible unvaccinated must rely.

The Borough Isolation Hospital.

Seventy-five patients were under treatment during the year ; 64 cases were admitted, 64 were discharged, 4 died, and there were 7 remaining on 31st December.

The diseases treated were Scarlet Fever, Diphtheria, and Typhoid Fever. The number of cases of each disease with their result is given in the subjoined table. The locality from which they came is shewn in the Appendix Table B.

	Scarlet Fever.	Diphtheria	Typhoid Fever.	Totals.
Remaining 1st Jan., 1897 ...	10	1		11
Admitted ...	39	2	23	64
Discharged ..	42	3	19	64
Died ...	2		2	4
Remaining 31st Dec., 1897 ...	5		2	7

The admissions during each quarter of the year were as follows :—

	Scarlet Fever.	Diphtheria	Typhoid Fever.	Totals.
1st Quarter ...	7		10	17
2nd „ ...	10		4	14
3rd „ ...	7		5	12
4th „ ...	15	2	4	21

The average period of isolation for each of the above diseases was respectively 48, 30, and 28 days. As many of the Typhoid cases were of a very severe type, and as patients suffering from this disease are usually detained for at least a fortnight after the temperature is normal, I would direct special attention to the latter figure.

The following table shews the number of admissions during each year since the erection of the hospital. The last column refers to the percentage of the recorded cases of the diseases

named, which were admitted for treatment :—

	Scarlet Fever.	Diphtheria.	Typhoid Fever.	Totals.	Admission Percentage.
1894	9	7	17	33	22
1895	10	21	18	51†	46
1896	24	11	22	57	39
1897	70	5	10	85	31
1898	39	2	23	64	54
Totals ...	152	46	90	290	

† Including 1 case of Measles and 1 of Erysipelas.

In 1898 no less than seventy-two per cent. of the recorded cases of Scarlet Fever were admitted, and the percentages of admissions for Diphtheria and Enteric Fever were respectively 13 and 48. Owing to the limited number of beds at my disposal and the absence of provision for the simultaneous treatment of three infectious diseases, I was compelled to refuse many cases of Enteric Fever, and a few of Diphtheria.

As the expenditure in connection with the Isolation Hospital has risen since I took office in July, 1897, I would point out that during eighteen months I have treated 134 cases, whereas during the previous three and a half years the comparatively low number of 166 cases were admitted. In addition, the equipment of the hospital has been vastly improved, a matter of no small expense. The dietary is essentially similar to that adopted in the London Fever Hospitals, and in the severer cases no expense is spared to provide everything that may suggest itself to me as being advisable for the more efficient treatment of the patient.

The statistical axiom that hospital treated cases of infectious disease make better progress, have greater comfort, and are less fatal, *caeteris paribus*, than those treated in their homes, is beginning to be generally realised in this borough a fact which is by no means solely due to a participation in a gradual enlightenment on this subject, but is in large measure attributable to the excellent manner in which the hospital is managed by an experienced matron. This is becoming very generally known among the poor. Not once have I had to compel the removal of a single patient, my only difficulty lying in the selection of those cases, which, in the interest of Public Health, have a prior claim on available beds.

The South-East Pavilion, which is now completed and which will be open in the course of a few months, is a model of what an Isolation Hospital block should be. It will accommodate eight patients. The air space will be cubic feet per head, and it will be an ideal building for the treatment of Enteric Fever, to which use I intend to devote it, relegating cases of Diphtheria to the existing Typhoid block.

During the year the Administrative Building has been considerably enlarged in accordance with the directions of the Local Government Board Inspector. A new fence has been erected on the East side of the grounds, and the Laundry has been vastly improved.

The *personnel* of the hospital is the same as it was in 1897, there being four permanent nurses, two of whom are probationers. I continue to give systematic clinical instruction to the staff, and especially to the probationers, who have an excellent opportunity of obtaining a thorough knowledge of their duties. The caretaker, who looks after the clerical work of the hospital, is able to assist me while I am dispensing, and is, moreover, experienced in the nursing of infectious diseases.

I will conclude my remarks on this subject by stating the percentage of fatal cases occurring during each of the past five years, which has been as follows :—

	Scarlet Fever.	Diphtheria.	Typhoid Fever.
1894	0	42	6
1895	10	28	11
1896	0	0*	9
1897	3	0	20†
1898	5	0	8†

*Antitoxine treatment was introduced.

†This figure would be much lower were it not for some Port cases which were moribund on admission.

Sale of Food and Drugs Act, 1875.

Following the decease of Mr. J. NAPIER, the County of East Suffolk was for several months unprovided with a Public Analyst. Consequently during last Summer, when the efficient supervision of our milk supply demanded frequent taking of samples, the milk sellers were not interfered with. As milk is an article of diet which *par excellence* requires to be kept under the strictest observation during a season when the increased demand, resultant upon a large influx of visitors, is a temptation to adulteration, it is unfortunate that we were not in a position to enforce its being kept up to the standard of purity laid down by the Somerset House Authorities. This standard is, as I pointed out in my 1897 Report, about the lowest in Europe ; and even vendors whose milk fails to reach it, are, when prosecuted, ordinarily acquitted by the average magistrate, who of course has no technical knowledge of such matters. Should the milk-vendor, however, be convicted and appeal, it is said that he will probably obtain from the Central Authority an analysis more partial to his "milk" than was that of the County Analyst. It is satisfactory, however, to record that Mr. J. Napier returned as genuine, six samples of New Milk and four samples of Butter, which were submitted to him for analysis under the provision of this act.

I have received the accompanying report from Mr. W.
LINCOLNE SUTTON, F.I.C :—

THE LABORATORY,

LONDON STREET,

NORWICH,

February 25th, 1899.

*Report of the Public Analyst for East Suffolk to the Mayor
and Corporation of the Borough of Lowestoft, for the year
ending December 31st, 1898.*

GENTLEMEN,

I have the honour to report that since my appointment in August last, I have had submitted to me by Inspector Kett, under the Food and Drugs Act, 1875, 26 samples as under :—

			Total number of Samples.	Adulterated.
Milk	...	...	13	0
Butter	...	...	8	1
Spirits	.	...	5	2
			<hr/> 26	<hr/> 3

Percentage of adulteration, $11\frac{1}{2}$.

The particulars of adulteration are as follows :—

One whiskey was certified to contain 8 per cent. added water, and one to contain 11 per cent. added water beyond the lowest legal limit of dilution. One butter was certified to contain 20 per cent. foreign fats. A prosecution was instituted in this case, and on the application of the defendant, the Inspector's portion of the sample was submitted to Somerset House. The Government chemists certified to the effect that "the sample in question affords no evidence of the presence of fat other than butter fat." At the adjourned hearing of the case both Mr. Bevan, County Analyst for Middlesex, and myself gave evidence in support of my certificate, but in the face of the Somerset House certificate,

and of the evidence of one of the signatories thereto, the magistrates refused to convict.

In view of this conflict of opinion and the adverse decision of the magistrates, it becomes incumbent upon me to justify the certificate upon which this unsuccessful prosecution was based. No question arose as to the accuracy of my analysis, the figures obtained by each analyst being substantially the same. The conflict of evidence turned on the inference to be drawn from the analytical results. I say emphatically that the figures given by this butter so diverge from those of a normal butter that I could not possibly pass it unchallenged. In this opinion I was supported not only by Mr. Bevan but by other eminent analysts to whom I submitted my figures. On the other hand, Mr. Lewin, the Somerset House chemist, swore to the opinion that the butter was perfectly normal, and in support thereof quoted figures given by certain foreign samples which had been analysed at Somerset House, samples which on his own showing were exceptional. Of course it is essential that justice should be done, but I am of opinion that the chances are enormous against a commercial Irish butter revealing the same peculiar composition as exceptional samples for which Europe has been ransacked, or as to those made on a small scale or in a laboratory. I am constantly examining butters purchased from the most varied sources, and I have never met with any like the sample in question. This conflict of standard is most regrettable from many points of view, and especially in the interests of the purity of our food supply. A low standard is a retrograde step because it allows a wider margin for adulteration, a margin which experience shows has been and will be taken advantage of.

Eight samples of water have been submitted to me for analysis.

I am, Gentlemen,

Yours faithfully,

p.p. W. LINCOLNE SUTTON,

N.L.S.

Water Supply.

In the reports of my predecessors and in my report for 1897, attention was directed to the risk which people incurred through drinking water from most of the surface wells of the borough, and not a few cases of Enteric Fever were from year to year attributed to its consumption. During 1898 I was, however, unable to trace a single case of this disease to the drinking of well water, and this is, in large measure, attributable to the fact that nearly all the more dangerous of these wells have now been closed. Eighty-one per cent., *i.e.* 5,372, of the houses are supplied by the Lowestoft Water Company and the majority of the inhabitants of the remainder drink this water.

Apart altogether from analytical results and deductions, and judging solely by the absolute immunity which Lowestoft enjoys from water borne disease or indisposition, the water supply must not be reported on otherwise than favourably. I, however, think it most unfair that the public who consume the water, should not be conceded the privilege of their representatives—the Public Health Officials—being permitted to enter and inspect the source from which it comes. And this secrecy appears all the more astonishing when we consider that the Company has, during the past year effected considerable improvement in its works.

As a result of fragmentary information which I have elicited by means of judicious questioning, I am enabled to submit the following *précis* which I believe to be substantially correct:—An excavation of some four acres in extent appears to have been completed on the Hopton—South East—side of the reservoir, to a depth of about ten feet. Water has entered this excavation chiefly, I am told, from springs which come through a fine white sand or shingle. Within the past two years the storage capacity has been more than doubled, and I learn that recently 193 men have been regularly at work. Land has been purchased with a view to protecting the catchment area, a number of cottages have been rased, and a few remaining ones which were closer than is consistent with safety, are in course of demolition. As regards filtering, there are in use six filter beds, two of which are larger and more modern than the rest, and an additional large bed is in

course of construction. The filtering medium is sand, varying in depth from three to four feet. The sand which was formerly obtained at Lowestoft is now carted from a part of the beach near Gorleston, far removed from any source of pollution, and is of course washed prior to use.

The water is of the upland surface type supplemented by springs, and like most waters of this character possesses a high amount of albumenoid ammonia. It has been analysed monthly on behalf of the town and of the Water Co., and as regards the presence of free and albumenoid ammonia, I have myself kept it under systematic observation.

I am of opinion that it would be impossible to obtain in this district a sufficient supply of water in which the albumenoid ammonia, which is *per se* harmless, would not be excessive. I may say that the majority of analyses have shewn the free ammonia to have been almost absent (*e.g.* 0.001 per 100,000) or have altogether failed in detecting it. The amount of the latter has, however, occasionally been higher, and for this reason I hope that the Company will go on protecting their watershed. The water belongs to a class which many analysts would term "borderland," in which excellent filtration and absolute protection from possible contamination are imperative. Though I must concede that the Company appear to be doing as much as can be reasonably expected in both these directions, I cannot refrain from expressing the hope that the municipality will some day have the control of its own water supply.

Disinfection.

The steam disinfecter, which for a long time had been working unsatisfactorily, was overhauled early in the year. It then worked fairly well for some months but during the latter part of the year the greatest difficulty was experienced in obtaining the requisite pressure to secure efficient disinfection. It is again being overhauled and as a result may last for a year or so.

I expressed the opinion in my '97 report that the disinfection of linen should be supplemented by washing, in order that the existing tendency to hide away infected articles should be lessened.

The following is a list of articles which were submitted to steam disinfection :—

Beds, mattresses, pillows and bolsters	...	580
Bed clothing	... ..	580
Personal clothing)	
Miscellaneous articles	) ... ..	670
Total		1,830

The number of houses and articles disinfected during each of the five years ending 1898, was as follows —

	1894	1895	1896	1897	1898
Houses (including schools)	102	90	96	159	119
Articles	1634	1403	1438	2149	1830

Refuse Disposal.

The disposal of refuse in fields in the neighbourhood of the town has during the past year, as heretofore, been a fertile cause of complaint. At the beginning of 1898 I had hoped within six months, at the outside, to see a Refuse Destructor at work ; but between public meetings, objections, and reconsiderations as to site, and the delay incident to a Local Government Board enquiry, it is not even yet definitely known where the destructor is to be placed. I sincerely trust that in the interests of the Public Health this most necessary sanitary reform will be pushed on as rapidly as possible.

The site on Smith's Marsh which is at present receiving the consideration of the Local Government Board is, as was pointed out at the official inquiry, as good a one as could be selected. The need for the destructor is urgent and imperative, and when I consider that out of 6,656 houses in this town only 3,336 are provided with proper water-closets, and that the majority of the remainder possess privy-middens, I am only astonished at the paucity of complaints which I receive as to the present method of refuse disposal. These middens are being gradually removed,

but at the present rate it will take years before they are all dealt with. During 1898 seventy of the most insanitary of these structures were converted into water closets. In the latter half of 1897 nearly double that number were dealt with; and the following table shows the number so converted each year since 1890:—

1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.
52	37	58	19	70	122	163	70

Drains and Sewers.

In my last report I pointed out that the **ventilation of the sewers** in Lowestoft was inadequate. An additional year's experience has convinced me that defective sewer ventilation is one of the most fertile causes of Zymotic disease in this town.

Engineering difficulties have delayed the work of constructing a new main sewer outlet, and the existing outlet is tide-locked for some twelve hours a day. Consequently, as in all ill-ventilated "sewers of deposit," gas accumulates under considerable pressure, and not finding an efficient exit through the ventilating manholes and occasional shafts, forces the traps of the road-gullies. These gullies have been described in previous reports. The effluvium in their immediate vicinity is not infrequently so offensive as to induce the inhabitants of adjoining houses to cover them up. Under existing circumstances it is perhaps, however, an advantage that the sewer gas does effect an exit in this manner, as it would otherwise enter the houses. In the interest of the Public Health the erection of a very large number of ventilating shafts is most emphatically necessary. They should be circular in section, of wide diameter and they should have no bends, or as few as possible. The positions in which they are most urgently needed are precisely those where sewer gas is known to escape. It is known that every rectangular bend in the course of a ventilating shaft reduces its value by one half, consequently the straighter they are the better. They are now ordinarily erected in similar positions to lamp posts, and can be carried to a great height without any side-stay or support.

You contemplate lighting the main street of the town by electricity. There is no reason why the supports of the electric lights should not be used as ventilating shafts for the sewers.

All **new drains** are of course water tested, and the water is allowed to remain until they are completely covered up. By this means any displacement is at once detected. There is undoubtedly a great deal of sophistication practised in the manufacture of cements, so that many joints which stand the water-test become defective after a few months. For this reason I should prefer to see Stamford Joints or some of the other improved joints used.

In my '97 Report I directed attention to the need for Public Baths and Washhouses. Only 387 of the houses in Lowestoft have fixed baths, as the exorbitant price charged by a private Water Company prohibits their use among all save the well-to-do. Through the courtesy of the local manager of that Company I am enabled to supply the following table.

LOWESTOFT WATER AND GAS COMPANY.

Return of Houses supplied with Company's Water, and Number of W.C's. and Baths.

YEAR ENDING 25TH DECEMBER, 1898.

Total number of Houses supplied	...	...	537 ²
Houses with 1 W.C.	...	...	2317
" " 2 W.C's.	...	...	899
" " 3 "	...	...	106
" " 4 "	...	...	14
" " 5 "	...	...
" " 6 "	...	...	1
" " 7 "	...	...	1
Houses with 1 Bath	...	...	382
" " 2 "	...	...	4
" " 3 "	...	...	1
Total number of Houses with Baths	...	...	387
" " " " W.C's.	...	...	333 ⁸

Lowestoft, 26th January, 1899.

Common Lodging Houses have been regularly inspected and supervised, and one additional lodging house has been registered. The class of people who look after such dwellings

usually violate the bye-laws as soon as the inspector's back is turned. These houses are the abode of tramps, and if a disease like Small-pox were imported the first case would not improbably be found in one of them. One lodging house was in a state so dangerous and injurious to health that I reported it as unfit for human habitation, and it has since been closed.

It has been proved that properly constructed lodging houses, supervised by Local Authorities, can be worked at a profit, and I would urge the advisability of your erecting such premises. Attached to them could be the accommodation which, under Section 15 of the Infectious Diseases Prevention Act (1890), you are authorised to provide for persons temporarily displaced from their dwellings during disinfection.

I have visited and inspected every **Slaughter-House** in the Borough. Most of them are kept in a cleanly condition, and the regulation as to white-washing is enforced when necessary. Some of them are modern and well constructed, but others are absolutely unsuitable for the killing of animals. My chief complaint as to the majority is their proximity to dwelling houses. I hope, in the interest of the public health, that as an outcome of the expected legislation as to tuberculous cattle, the slaughtering of beasts in **Public Abbatoirs** will be made compulsory.

I have visited and measured every **Cow Shed** in the Borough, and am enabled to report that in not one instance was the floor-space per head less than seventy square feet. The number of cubic feet per head varied from 770 to 900. Most of them are fairly well paved and drained, and in the majority the cows are stalled with their heads free, *i.e.* not facing a wall, an important point in connection with the dissemination of Bovine Tuberculosis. One of the sheds, however, was kept in a filthy condition, draining into the earth beneath. There were no cattle in the shed on the occasion of my visit, but several pigs. The demolition of this shed is now anticipated. My chief objection to some of the cow-sheds was the proximity of middens and pigs. People have been so accustomed for generations to this sort of thing that they would no doubt here, as in many other sanitary matters, resent the directions of a medical officer as an

unwarrantable interference. Within recent years, however, the medical profession has more and more clearly demonstrated the necessity of conducting all dairy operations in places far removed from effluvia and possible sources of contamination.

Mr. Sydney Smith, M.R.C.V.S. informs me that he does not know of the existence of a single tuberculous cow within the Borough of Lowestoft, and that the disease is not nearly so prevalent in East Suffolk as in most parts of the country. He, however, points out that, especially in summer, most of the milk consumed here comes from a distance, and that a large amount of tuberculous milk is unquestionably imported. This latter fact is substantiated by the annual record of infantile deaths from tubercular diseases, which are known to be almost solely communicated through the agency of milk.

My observations as to **Milk-Shops** are merely a re-iteration of those which I published in my report for 1897. I have myself inspected them systematically.

Bake-Houses have been regularly inspected, and are on the whole kept in a cleanly condition. In only one is the bread made by machinery. I take this opportunity of protesting against the custom of delivering bread exposed in open carts. I am convinced that in times when Zymotic Disease is prevalent, this custom is, especially in dusty weather, insanitary. A very superficial knowledge of the nature of "infection" will convince anyone of the reality of this statement. In some continental cities, so particular are the inhabitants as to the cleanliness of the staple article of diet, that every loaf on leaving the oven is placed in a paper bag, and in this manner reaches the consumer.

Workshops and Factories have been regularly inspected, and reports of H.M.'s. Inspector as to insufficient or defective sanitary conveniences have been attended to.

Having received several complaints from gentlemen who reside near the allotment gardens, situated on the west side of the Yarmouth Road, in the North Ward, and close to the Belle Vue Park, I made a systematic inspection of piggeries, which are promiscuously studded about the allotments referred to. Prior to making this inspection, I satisfied myself as to the real

existence of a nuisance which was not alone objectionable to many who had the misfortune to hold allotments adjoining those on which certain piggeries were placed, but was actually a cause of frequent sickness in at least one individual, who was compelled to inhale the noxious effluvium emanating from one or more of these structures. It is unnecessary to recapitulate circumstances in connection with my condemnation of these piggeries, circumstances as to which the Local Government Board, through the instrumentality of an aggrieved person—a gentleman who resides in the vicinity—have already been apprised.

My action resulted in the removal of the worst of these nuisances ; but complaints have been made since that time, and ozonometric observations in connection with the Meteorological Department have incidentally given chemical corroboration of the evidence which the sense of smell furnishes as to the existence of an offensive effluvium from these pig-styes.

I shall limit my observations by simply stating that, in my opinion, a piggery on an allotment garden is a nuisance ; that an allotment garden is not a fit and proper place for the erection of a pig-stye ; that piggeries should be abolished from allotment gardens ; and lastly, that the keeping of pigs being a profitable and remunerative industry, the necessary steps should be taken by the municipality to secure the provision of properly constructed pig-styes in definite places, so far removed from dwellings, highways or allotment gardens, and so regulated, that they may not be a nuisance and injurious to health.

The Cleaning of Streets is, owing to the introduction of machine sweeping, done more thoroughly than heretofore, and, on hygienic grounds, I should like to see an additional machine regularly at work. Moreover, in summer time the main thoroughfare, which is unpaved, should in my opinion be swept by boys with brush and pan. This improvement came under your consideration, but was negatived on the ground that the few bins which would have to be erected would be nuisances. If properly placed and constructed and regularly emptied, there is no reason why they should be a nuisance, and the manure so obtained should pay for the labour employed. I would point out that the

irrigation of such manure with water containing a little crude Sulphuric acid, not only prevents effluvium, but increases its agricultural value.

Several cabstands have been paved, and an excellent convenience has been constructed in a central part of the town.

Reference to the Sanitary Inspector's Report will show that **349 drains have been water-tested**, and that only **three smoke nuisances** have come under observation. Many complaints have been made as to effluvia which occasionally ascend from the North Beach, and which I attribute to the deposit of lime waste, popularly known as "blue billy," from the gas works. This smell though most offensive is not held to be in any way poisonous, the men who are engaged in the work being healthy. It is an odour with which the inhabitants of most towns are familiar. I advise that the material should be carted and deposited only when the wind is off shore. The Main Sewer Outfall is close to these gas works, and the manager of the latter complains that at low tide the effluvia from this source is a nuisance to those employed on these works. All that can in reason be expected is however being done to complete the construction of the new outfall.

In an appended leaflet which contains the principal precautions which should be taken for preventing the spread of Consumption, I direct attention to the infectious nature of tubercular expectoration. Consumptive patients are perforce compelled to expectorate, but there are many others who are addicted without any sufficient reason to the filthy habit of **spitting in public places**, to the annoyance of those who are well bred, and to the prejudice of the public health.

Consumption is by no means the only disease which can be disseminated in this manner, and those who wantonly indulge in the habit are not aware that they are thereby wasting a secretion which is essential for the efficient assimilation and digestion of their food. I particularly allude to this matter because I know of no town in England where the habit is more freely indulged in by the male inhabitants of the less educated classes. On Saturday

nights, large portions of the footpaths in the chief thoroughfares are mottled with saliva, and the flooring of shelters on the Esplanade is not unfrequently in a similar condition.

To break a large portion of a population of a bad habit is by no means a simple task. It would take years to educate the masses on such matters, but I take it that a Local Authority is statutorily empowered to prevent such a nuisance in certain places. Those who are unprovided with pocket handkerchiefs and compelled through any cause to expectorate, should be made to do so in the gutter, and not on the pavement. I advise, however, that precautionary notices should be printed, circulated, and posted in conspicuous places, and that licensed victuallers should be asked to assist the Local Authority by exposing such notices in their premises. Above all, school children should be educated as to the dangerous and objectionable nature of the habit.

A National Crusade against Consumption has been initiated, and will undoubtedly be attended with some benefit. I think that the filthy habit of promiscuous spitting emphatically calls for some such similar procedure.

New Streets and Buildings.

It is, I think, somewhat anomalous that plans of new buildings are not submitted to the Sanitary Committee of the Corporation, and that I am not consulted as to the suitability of any proposed site. The Local Government Board directs that I should report on this matter, but I am unable officially to offer any adequate comment on the structure and sanitation of houses which have been built since I entered into office.

May I, in conclusion, point out that it is not the desire of the Local Government Board that a Medical Officer's Annual Report should be a panegyric on the climatic conditions and health of his

PRECAUTIONS FOR CONSUMPTIVE PERSONS

Consumption is an Infectious Disease.

It is spread by inhaling the expectoration (spit) of patients, which has been allowed to dry and to float in the air as dust.

Unless you adopt the following **PRECAUTIONS**, members of your own family, and also persons who are delicate, may catch the disease.

1.—Expectoration, whether in-doors or out of doors, should be received into paper or rag, and afterwards burnt. The expectoration may also be received into a vessel or spittoon, which should be emptied into the drain, and then washed in **boiling** water or any disinfectant ordered by the doctor.

2.—If handkerchiefs are ever used they should be put into boiling water before they have time to dry.

3.—Instead of dusting rooms, particularly bedrooms, remove the dust with a damp cloth which should afterwards be boiled.

4.—Sunlight and fresh air destroy the infection. Every Consumptive should sleep with the bedroom window open top and bottom, and during the day should, when in-doors, occupy only a well-aired and ventilated room.

5.—Consumption is often curable; but to cure it you must always have fresh air. If warmly clad, a consumptive person need not fear keeping out of doors in the coldest weather.

N.B.—The patient is the greatest gainer by the above precautions, as his recovery is generally prevented by breathing again the dried expectoration.

Very many **COWS** have Consumption. All **MILK**, especially when given to children, should be heated till it almost boils, or else actually **BOILED**. Less heating will not kill the infection. Many children die because the milk is not boiled or almost boiled.

More than one fourth of the deaths in England, between the ages of 15 and 55, are caused by Consumption.

This leaflet is issued by the Medical Officer of Health, and by order of the Sanitary Authority of the Borough of Lowestoft. It is hoped that all who read it will do their utmost to assist in preventing the spread of the disease.

district, but that it shall contain concise and explicit statements as to *conditions injurious to health* which have come to his knowledge and also his advice (which by virtue of his scientific and technical education he is competent to give), as to the measures which are indicated in order that these injurious conditions may be removed. A very great deal can justly be said in praise of this charming sea-side resort, but such has been neither the aim nor object of this report.

Sanitary Inspector's Report, 1898.

Number of Complaints	...	...	...	14
Inspection of Houses, Premises, etc.	...	..		1351
Re-inspections	„	„	...	294
Orders issued for Sanitary arrangements of houses and premises	..	...	...	54
Houses disinfected after illness of an infectious character	...	...	...	119
House Drains repaired, cleansed and trapped	...			87
„ „ ventilated	...	...	...	95
Number of Lodging houses registered	...	...		1
Dust Removal complaints	...	...	...	375
Bake Houses inspected and white-washed	...			72
Cowsheds inspected	...	...	...	8
Registered Milk Shops inspected	...	...		25
Licensed Slaughter Houses inspected	...	...		13
Drains water tested	...	...	...	349
„ Re „ „	...	...	...	66
„ Smoke „	...	...	...	71
Privies converted into Water Closets	...	...		70
Defective Water Closets	...	...	...	21
Blocked Drains	...	...	...	56
Smoke Nuisances	...	...	...	3
Dead Wells abolished	...	...	...	2
Sink Pipes connecting into drain	...	...		1
Condemned 40 Bushels of Potatoes.				

TABLE OF

During the year 1898, in the Borough of Lowestoft

(A)

Diseases, Ages

<small>NAMES OF LOCALITIES adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.</small> (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 20. (f)	25 and under 65. (g)	65 and upwards. (h)
North Ward	146	57	18	3	7	28	33
South Ward	88	36	7	3	2	24	16
East Ward	88	30	8	1		21	28
West Ward	99	35	11	1	1	28	23
Isolation Hospital	4		2		1	1	
Lowestoft Hospital	22	1	3	2	2	11	3
Port District	2					2	
TOTALS	449	159	49	10	13	115	103
The subjoined numbers have also to be taken into account							
Deaths occurring outside the district among persons belonging thereto.	19	5	2		2	4	6
Deaths occurring within the district among persons not belonging thereto.	24		1	1	2	14	6

DEATHS

Urban Sanitary District, classified according to
and Localities.

MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN
UNDER FIVE YEARS OF AGE.

(i)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	Smallpox	Scarlatina	Diphtheria	Membranous Croup	FEVERS.					Cholera	Erysipelas	Measles.	Whooping Cough.	Diarrhoea and Dysentery.	Rheumatic Fever.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease.	Influenza.	Injuries.	All other Diseases.	TOTAL.
					Typhus	Enteric or Typhoid	Continued	Relapsing	Puerperal													
Under 5													8	17		1	13			1	35	75
5 upwds.			1			1			2				1			7	11	9	3		36	71
Under 5			1										2	9			12	1			18	43
5 upwds.						1					1					3	2	5	4		29	45
Under 5													9	7			7				15	38
5 upwds.															1	1	5	11	5	1	26	50
Under 5			1										8	8			7		1		21	46
5 upwds.									1				1	1		1	6	11	2	1	29	53
Under 5		2																				2
5 upwds.						2																2
Under 5																					4	4
5 upwds.						2											1	3		1	11	18
Under 5																						
5 upwds.																				2		2
Under 5		2	2										27	41		1	39	1	1	1	93	208
5 upwds.			1			6			3		1		1	2	1	12	25	39	14	5	131	241

in judging of the above records of mortality.

Under 5												1			1						5	7
5 upwds.									1								1	2			8	12
Under 5																						
5 upwds.						1					1					2		3	2	1	14	24

TABLE OF POPULATION, BIRTHS, AND O

(B) Coming to the knowledge of the Medical Officer of Health, during
classified according to **Diseases**

NAMES OF LOCALITIES adopted for the purpose of these statistics ; Public Institutions being shown as separate localities. (a)	Population at all Ages.		Registered Births. (d)	Aged under 5 or over 5 (e)	New Cases of Sickness in each knowledge of the Medical								
	Last Census. (b)	Esti- mated to middle of 1898 (c)			1	2	3	4	5	6	7	8	9
					Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	FEVERS.				
									Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puereral.
(a)	(b)	(c)	(d)	(e)	Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puereral.
North Ward		7450		Under 5 5 upwds.		1 8	1			1 19			1
South Ward		6000		Under 5 5 upwds.		2 7	2 3			1 10			1
East Ward... ..		5211		Under 5 5 upwds.		1 6	1 2			4			
West Ward (H)		7400		Under 5 5 upwds.		7 21	3 3			1 10			1
Lowestoft Hospital ...				Under 5 5 upwds.									
Port... ..				Under 5 5 upwds.						3			
TOTALS	23151	26061	864	Under 5 5 upwds.		11 42	7 8			3 46			3

State here whether "Notification of Infectious Disease" is compulsory in the District—
with blank headings the names of any other Diseases that are notifiable in the District, and fill
the District—Mark (H) the Locality in which such Hospital is situated; or if not within

NEW CASES OF INFECTIOUS SICKNESS,

the Year 1898, in the Lowestoft Urban District ;

Ages. and Localities.

Locality, coming to the Officer of Health.				Number of such cases Removed from their Homes in the several Localities for Treatment in Isolation Hospital.												
10	11	12	13	1	2	3	4	5	6	7	8	9	10	11	12	13
Cholera.	Erysipelas.	Measles.	TOTAL.	Smallpox	Scarlatina.	Diphtheria.	Membranous Croup.	FEVERS.								
								Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.	Cholera.	Erysipelas.		
	1	7			1				1							
	2	8			7				13							
		4			2											
	4	42			7	1			1							
		3				1										
	1	1			3				3							
		11			3											
	5	6			16				4							
									1							
	1	25			6	1			1							
	13	58			33	1			22							

Since when?—February, 1890. Besides the above-mentioned Diseases, insert in the columns the columns accordingly. State here the name of the Isolation Hospital used by the sick of the District, state where it is situated—The Lowestoft Sanatorium, Rotterdam Road, Lowestoft.

Result of Observations on Temperature and Rain at Lowestoft, 1898.

1898.	TEMPERATURE.			RAINFALL.		
Month.	Highest.	Lowest.	Mean Temp. of Air	Mean humidity	Monthly Fall.	Days of 0.01 inch and above
Jan.	⁰ 56.1	⁰ 30.4	⁰ 43.2	0/0 90	Ins. 0.93	10
Feb.	58.9	24.4	40.2	83	0.93	13
Mar.	62.3	25.4	39.7	86	1.60	13
April	64.7	27.4	47.0	80	1.07	12
May	61.7	34.9	49.4	83	2.78	18
June	75.0	37.4	56.0	73	3.69	14
July	76.1	39.9	58.7	78	1.86	8
Aug.	77.5	45.4	61.6	78	1.20	11
Sept.	78.1	39.7	60.4	75	0.16	2
Oct.	66.0	41.6	54.3	84	3.04	12
Nov.	60.8	30.1	46.5	87	2.97	17
Dec.	56.1	28.1	44.3	82	2.29	13
Mean Temperature of the year 50.1 deg.				Total Rain	22.52 inches.	143 Days.

Bright Unclouded Sunshine.

TOTAL DURATION.			GREATEST DAILY.			SUNLESS DAYS.
1898.	Hrs.	Mins.	Hrs.	Mins.	Date.	
July	209	4	13	30	31	4
Aug.	226	26	13	35	12	3
Sept.	179	25	10	0	4	3
Oct.	105	47	9	0	3	7
Nov.	60	39	6	15	1	10
Dec.	51	0	4	50	15	11
Total in 6 months ... 832 21						38

Earth Temperature.

The highest and lowest readings of thermometers placed below the surface of the soil at depths stated below. These readings show extremes of the year, which for practical purposes are more important than the means.

Readings made at 9 a.m. daily.

BELOW SURFACE.	HIGHEST IN THE YEAR.	DATE. 1898	LOWEST IN THE YEAR.	DATE.
1 foot	66.7	15th Aug.	35.3	22nd Feb.
2 feet	66.0	16th Aug.	36.3	23rd Feb.
4 feet	61.3	26th Aug.	41.9	25th Feb. to 12th Mar.

The thermometer at 4 feet rose to 56 degrees on 2nd June; reached its maximum, 61.3 degs. on 26th August; fell to 56 degs. on 17th October; was down to 55.7 degs. on 31st October, and 45.3 on 31st December.

Direction of the Wind during 1898.

N. to N.E.	...	74	days.
E. „ S.E.	...	54	„
S. „ S.W.	...	127	„
W. „ N.W.	...	106	„
Calm on 4 days.			

Notes on the Weather, 1898.

January.—This was a remarkably fine month. The mornings were sometimes hazy and cloudy, but then followed fair and sunny days. There was no sign of winter. On three days only did the thermometer touch the freezing point. No snow nor hail was recorded. From the 15th to the 29th there was only a sprinkling of rain, on two days, and less than one inch fell in the month. The wind was between S.W. and N.W. on 25 days—and till the last days there was no force above a fresh breeze. The mean temperature was 6 degrees above the local average of the month. On the 30th the highest temperature in shade was at 9 p.m. ($55\frac{1}{2}$ degrees).

February.—The month opened “fair.” A stiff gale from Westward on 2nd, and a little snow and hail on 4th, and slight frost on the grass from 4th to 9th. The coldest period of the month was 21st and 23rd, but the weather fine. The mean temperature was less than that of January, but about 2 degrees above the average of February. Wind from S.W. to N.W. on 26 days.

March.—There was a slight touch of wintry weather in the early part of the month—then a little hoar frost and fine days. The thermometer in the shade fell below the freezing point on 6 days—the lowest was $25\cdot4$ degrees on 15th—on the grass $21\cdot3$ degrees on 6th. Half the days of the month were recorded “fine” or “fair.” From 24th to 26th the weather was strong, with a stiff gale from N.E. The wind

was N. to N.E. on 18 days. The temperature below the average about 1 degree. About $1\frac{1}{2}$ inches of rain fell on 13 days.

April.—This month began with a rather low night temperature, and only one hundredth of an inch of rain fell in the first week. But on 7th, the temperature in shade rose to 64.7 degrees, the highest of the month, and no frost after the 5th. The days were generally warm. The thermometer in sun's rays rose to 122 degrees on 7th, and the average of solar radiation was $101\frac{1}{2}$ degrees—average on grass 37 degrees. Some rain fell on 12 days. From the 14th to 26th was a dry period, and the total rainfall little more than 1 inch. There was no really rough weather. The wind blew from N.E. to S.E. on 16 days, and S. to N.W. on 14 days. The mean temperature of the month was 3 degrees above the average.

May.—Opened with showery and unsettled weather, with bright intervals. The 4th was stormy with hail showers and $\frac{1}{4}$ inch of rain, but the temperature was not low; the lowest of the month was 35 degrees, on 13th. On 20th there was a thunderstorm, and 1 inch of rain fell—then followed a week of dry and fairly warm weather and the highest temperature in shade was 61.7 degrees, on 29th—but the mean temperature of the month was just equal to the local average. The coldest nights were accompanied by a N.W. wind. On 14 days the wind was between N. and S.E. and 17 days between S. and N.W.

June.—Unsettled weather marked the beginning of this month—with the wind from a westerly direction—though the mornings opened "fair," and the solar radiation was nearly 120 degrees till the 9th. The heaviest rain of the year occurred on the 9th—10th, early morning, during a thunder, storm and nearly 2 inches were recorded in the 24 hours, but with the wind N., the thermometer in the shade rose to $61\frac{3}{4}$ degrees. The day temperature was not high till the 18th, when 75 degrees shade temperature were registered—

the mean temperature of the month was equal to the local average, being 56 degrees, which is the mean temperature of June for 20 years.

July.—Began with a fall of $\frac{1}{2}$ inch of rain, then a dry period set in, and but little fell till the 22nd, when another $\frac{1}{2}$ inch was recorded. Rain fell on 8 days only—upon the whole the month was genial, the temperature not high but equable; the 18th was the warmest day and the highest temperature 76 degrees. The mean of the month just attained an average. Wind, N. to S.E. on 9 days; S. to N.W. on 22 days.

August.—Fine, warm weather characterised the opening days, but on the 4th showers commenced and lasted till the 10th. The heaviest rain of the month occurred on the 7th, *i.e.*, $\frac{7}{10}$ inch, and on the 8th the lowest max. temperature of the month. Then followed fine days and nights, and the highest temperature was attained on the 22nd and 23rd, 77 degrees, and night temperature 60 degrees. There was some electric disturbance between the 16th and 28th, but no heavy thunderstorm. The mean temperature was 2 degrees above the average.

September.—This was a very fine month, sunny and mostly cloudless; the highest recorded temperature of the year was on the 14th, but 78 degrees is not oppressive, (above 90 degrees were felt in some inland places)—the pleasures of the sea-side were enjoyed to the full; the sea breezes were mild—the temperature of the *wet bulb* was frequently 60 degrees at 9 p.m. A little rain fell on 2 days only. Mean temperature, 3 degrees above the average.

October.—The fine weather continued for 10 days in October—the temperature equable, and when $\frac{3}{4}$ inch of rain fell on 11th and 12th, there was no material fall in temperature. There was not a cold night throughout the month; the rain-fall was 3 inches, an average for October, and for 16 days

the wind blew from the West of the Meridian. Mean temperature, 5 degrees above the average.

November.—The month opened "fine"—there was a rather strong gale from S.W. on 2nd and 3rd, but very little rain till after the 20th. The max. temperature was above 50 degrees every day till the 20th, and the night temperature only just touched the freezing point on 23rd, but no continuance of frost. The 25th and 26th, "rainy days." Mean temperature, 2 degrees above local average.

December.—There was no wintry aspect about this month—the mean max. temperature was just 50 degrees, and the night temperature 40 degrees. There was a sprinkling of snow on the 20th, and this was followed by hoar frost on 3 mornings. The last day of the year was the coldest, and yet the shade temperature at 9 p.m. was 43 degrees. Mean of month—5 degrees above average. Wind S.W. 22 days; N.W. 8 days.

Average temperature of the year more than 2 degrees above the average of 20 years.

S. H. MILLER.

PORT OF LOWESTOFT.

Medical Officer's Annual Report for 1898.

At the close of 1898 there were 479 boats registered at Lowestoft under the "Fishing Boats Act," about 440 of which are on the Imperial Register. In addition, about twenty boats, registered elsewhere, use the port regularly, so that practically 500 boats engaged in the fishing trade have systematically plied from the port during the year.

The total number of vessels registered under the "Merchant Shipping Act," as belonging to Lowestoft, is 537.

The accompanying table shews the total amount and tonnage of Inward Shipping, Foreign and Coasting, during the year :—

			Cargo.	Ballast.
FOREIGN VESSELS				
Steam ...	...	53		
Sailing ...	...	95		229
COASTING VESSELS	...	500		18
TOTAL	...	648		247
TONNAGE ...	...	98,508		13,480

The total tonnage of Inward Shipping during the past four years has been as follows :—

1895	..	...	...	107,608
1896	...	...	...	111,987
1897	...	...	...	114,351
1898	...	...	...	111,988

The health of the Port, as judged by the returns of sickness and mortality on shipboard, has been on the whole satisfactory. The only cases of notifiable sickness which came under my observation were three cases of Enteric Fever on board trawlers, two of which were Lowestoft boats. There was no evidence to shew that the disease was in any of these instances contracted on board ship, and one case was imported from Newhaven. The most lamentable feature, however, about these cases is, that all three patients died, and this appears to be the usual fate of those who have the misfortune to be in a fishing vessel during the earlier stages of the disease. The insufficient air space has probably more to say to this, than the improper feeding and other discomforts, which are under such circumstances inevitable. One of these cases died in the Isolation Hospital, and the other two, not having been diagnosed at the outset, died in the General Hospital. The Newhaven boat had put to sea before the disease, which was notified from the General Hospital, came to my knowledge. The other boats were pumped and thoroughly cleansed, one of them being fumigated and re-watered.

In addition to the above, three rather severe cases of Diarrhœa on board a private yacht were reported to me. I suspected the water which had been taken in at Havre as having caused the disease. During the Smallpox epidemic at Middlesboro', I visited every steamer coming from that port, but fortunately found no case of sickness on board.

Adverting to my remarks in my '97 Report, as to water storage for the supply of ships, I have to state that the tanks used for this purpose are now cleansed every three months, and that water taken from them was satisfactorily reported on by the Connty Analyst.

Fortunately another year has passed without the arrival in this port of a case of **Quarantinable Disease**; but you are bound as a Port Sanitary Authority to keep, at the expense of local ratepayers, a place in readiness for the isolation and treatment of such disease, should it be imported. The iron block attached to your Isolation Hospital has been held in readiness for that purpose. Here, as in other ports, ratepayers are compelled to meet the expense of protecting the country generally from the importation of such diseases as Cholera and Bubonic Plague. Such a law is, I submit, a usurpation of the principles of equity, and I trust that my colleagues, the Port Medical Officers of this Country, will not hesitate to publicly endorse the opinion, now generally held, that it should be rectified.

Nationality of Ships entering the Port during 1898.

British	...	...	...	793
French	..	...	...	78
Norwegian	...	...	...	45
Dutch	...	...	...	16
Danish	...	...	...	13
Belgian	...	...	...	8
Swedish	...	...	...	6
German	...	...	...	5
Russian	...	...	...	4

Vessels arriving in Port have been systematically inspected. Twenty-eight have been cleansed. Within the past twelve months, there is an appreciable improvement in cleanliness of trading vessels. Colliers which touch at this port are, as a rule, whitewashed every few months ; the work being generally carried out at their loading stations—Shields, Hartlepool, and Seaham Harbours.

The Sanitary Inspector, who is also the local inspector under the **Canal Boats Act**, reports that he has systematically supervised the sanitary condition of Canal Boats. Altogether seventy-nine boats have been inspected during the year, and have been reported upon as having been kept in a cleanly condition. One case of over-crowding and one of non-conformity with the regulation which requires separation of the sexes, came under observation, and were forthwith rectified. The drinking water in these boats is ordinarily stored in stone bottles. The boats are not yet registered under the Canal Boats Act ; but, as H.M.'s Canal Boats' Inspector officially visited Lowestoft last summer, I presume that this matter has received or is receiving consideration. Eleven of these boats have been painted and thoroughly cleansed.

