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# Report

FOR THE YEAR 1893,

PRESENTED TO THE

## Spilsby Rural Sanitary Authority

BY

FRANCIS J. WALKER, M.D., Cert. Sanit. Sci.,

**M.R.C.S., Eng. ; L.R.C.P., Lond. ; L.S.A.,**

MEDICAL OFFICER OF HEALTH.

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THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

RESEARCH REPORT

NO. 100

BY

J. R. OPPENHEIMER

AND

H. S. GARDNER

CHICAGO, ILLINOIS

1951

PHYSICS DEPARTMENT

UNIVERSITY OF CHICAGO

CHICAGO, ILLINOIS

TO THE  
SPILSBY RURAL SANITARY AUTHORITY.

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GENTLEMEN,

I beg to lay before you my report for the year ending December 31st, 1893.

The year just passed will long be remembered on account of the great drought that prevailed during the Spring and Summer months. The total rainfall was 21.17 inches, being 7.32 less than the average for the last 18 years. From March to September the fall was only half the average, the actual amount being 8.31 inches as against 16.76.

There has been constant work for your Sanitary Officers during the past year, owing to the great increase in number of "notifications" received, a number which has far exceeded that of any of the last three years, and indeed is greater than that of all of them put together. Scarlet Fever was by far the most troublesome of all the diseases of the Zymotic Class, but notwithstanding this increased prevalence, the total death-rate of this class of diseases was not above the average of the last ten years.

During the year the Sanitary Committee of the Lindsey County Council sent circulars to all Sanitary Authorities complaining of the difficulty experienced

in epitomising and considering the Annual Reports of Medical Officers of Health, in consequence of either a want of uniformity in the subjects covered by the report, or the irregular order in which such subjects are stated; and asking that the attention of the Medical Officers of Health might be drawn to the order of the Local Government Board on that subject, and that instructions might be given to each Medical Officer of Health that in making his report he might arrange the several subjects in the same sequence in which they are stated in the orders. Since I have always endeavoured to arrange my report as nearly as possible after the plan set forth in the circular of the Local Government Board, I find I have very little to alter or modify.

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### EPIDEMIC DISEASES.

MEASLES.—This disease appeared in eight parishes during the year. In January there were a few cases in Ulceby, and no fresh ones were heard of until July, when the disease broke out in Friskney, one case proving fatal. In October and November Measles prevailed most extensively in Alford, and in the following month extended to the neighbouring villages of Huttoft on the one hand, and South Ormsby and Driby on the other; and as by experience the closing of schools has been found to be one of the chief ways of staying an epidemic, the

schools of these parishes were closed one week earlier than they otherwise would have been for the Christmas holidays, and thus the disease was prevented from spreading. The Alford outbreak caused altogether three deaths, one child aged four, and the other two each under one year. During the same months the disease appeared in Wainfleet, and as the victims were nearly all attending the Wainfleet All Saints' National School, I thought it advisable at once to close that institution, and keep it closed for about three weeks, and this step was found sufficient to stamp out the epidemic. In the Wainfleet outbreak I was able to discover at least thirty cases, but I am glad to say none proved fatal.

SCARLET FEVER.—In this district this was by far the most prevalent of all the infectious diseases during the year, for not a single month passed, but that I had either isolated cases to watch or an epidemic to contend with. Altogether I received 188 notifications, and of these 173 were from medical men and only 15 from householders. This small number from householders is I think one of the reasons why this disease still remains so prevalent amongst us, for owing to this I fear many cases still escape our observation. The reasons for this unsatisfactory state of things are several. First.—There always have been and always will be a few cases of Scarlet Fever in character so mild as to escape the detection of householders and even of medical practitioners. Second.—Up to the present a great deal of ignorance prevails regarding the laws



of notification, but this I hope is being gradually diminished. Third.—There still exists I fear among certain people, owing to domestic or commercial reasons, a wilful desire to evade the law. Your Sanitary Officers avail themselves of every opportunity to make plain the provisions of the Act, but should these efforts in the future prove insufficient to increase the number of notifications from householders, they will be compelled when the evasion of the law is discovered to ask the Sanitary Authority to take action and bring the delinquent before the magistrates. The cases during the year having been so numerous and in many instances so scattered, I think it better to make a short epitome of them, showing the various months in which they occurred, their actual number, and, where ascertainable, their probable source.

- January. A few cases at Firsby. The remains of a small epidemic at the end of the previous year.
- „ A few cases at Thorpe.
- „ One case at Friskney. Imported from Dogdyke, a village in the Boston Union.
- „ One case at Alford. Previous cases in the same house in December 1892.
- February. One case at Wainfleet. Child attended Thorpe School.
- „ One case at Wainfleet St. Mary. Imported from Lincoln.
- „ Two cases in one house at Irby.
- „ An isolated case at Mumby.
- „ Seven cases in two houses at Toynton.
- March. One case at Wainfleet. Imported from Salmonby, a village in the Horncastle Union.

- April. One case at Eastville. Imported from Boston.
- „ An epidemic at East Keal.
- „ An epidemic at East Kirkby. Probably an extension from Miningsby, a village in the Horncastle Union, where Scarlet Fever was known to exist, the children of which village may attend Kirkby School.
- „ An isolated case at Spilsby.
- „ Six cases in one house at Hagnaby. Probably an extension from East Kirkby.
- May. One case at Alford.
- June. Two cases in one house at Willoughby. Probably caught from a mild unrecognised case.
- „ Eleven cases in one house at Eastville.
- „ Three cases in two houses at Spilsby.
- July. One case at Bolingbroke. Probably an extension from East Keal.
- August. One case at Sutton-on-Sea. Imported from Nottingham.
- „ Thirteen cases in three houses at Anderby. Probably imported from Ilkeston.
- September. One case at Wainfleet.
- October. Three cases in one house at Halton.
- „ One case at Willoughby.
- „ Six cases in five houses at Wainfleet St. Mary.
- November. Two cases in one house at Skendleby.
- „ Fifteen cases in five houses at Hundleby. Probably an extension from a mild unrecognised case.
- „ Three cases in one house at Bolingbroke.
- „ Ten cases in two houses at Halton. Probably connected with the cases in the same village in October.
- „ Thirty-two cases in nine houses at Toynton. Probably connected with the Hundleby epidemic.
- December. Two cases in one house at Spilsby. Probably connected with the Toynton epidemic.
- „ Three cases in one house at Great Steeping.
- „ Five cases in one house at Well.

In four of the epidemics it was found necessary to close the school, namely :—East Keal, East Kirkby, Hundleby and Toynton, and this led to the extirpating of the disease in each village respectively. After an experience of some years I have no hesitation in saying that the closing of a village school helps most materially to the stamping out of an epidemic of either Measles, Scarlet Fever, or Diphtheria. Although the number of cases of Scarlet Fever was so great it is a subject of congratulation that not a single death occurred. It is just possible however that this very increase may be more apparent than real, because in former epidemics before notification took place no notice was taken of the actual number of cases of sickness, but only of that of deaths. All the cases were visited by the Sanitary Officers, disinfectants were supplied, and after a time, as a final protection, the houses were stoved with sulphur.

WHOOPING COUGH. — This disease made its appearance during the latter half of the year. In July a few cases occurred at Thorpe, and resulted in one death, that of an infant four months old. In September the disease appeared in Croft and Wainfleet, and carried off three children all under five years of age. In November and December there were several children ill in Alford with Measles and some with Whooping Cough, and from the latter complaint four died.

DIPHTHERIA.—No death was recorded under this heading during the year, but 15 notifications were

received. The cases were scattered, both with regard to time and place, and many of them were of a very mild character. In four instances I was able to trace the source of infection, and of these, three were from places outside the district. In no instance did the disease spread beyond the house in which it originated, indeed nine of the cases were isolated ones.

ENTERIC FEVER.—I received 11 notifications of Enteric Fever, nine of isolated cases and two of connected. In February a sporadic case occurred at Rigsby. In the same month a case occurred at Spilsby and proved fatal. Here the sanitary arrangements were fairly good, and I could not trace the exact source of infection, but seeing that the patient had been visiting out of the district a fortnight previous to illness, it is probable she contracted the disease away from home. In April a case was reported from Spilsby, but no source of infection could be discovered, and the same may be said of another at Huttoft Bank in June. The next case that occurred was in September, and was an imported one, as the patient was ill when he came home to Friskney from Boston. During the same month another imported case was notified, this time from Thorpe, where a young man came home from Hull while suffering from the complaint. He died on September 13th. About the same time a sporadic case occurred at Winthorpe, which there was nothing unsanitary to account for, and two cases in one house were notified from Irby. Here the well was in a dilapidated state and the water supply was bad.

One of these patients died, and the other recovered. In November isolated cases occurred at Hundleby and Welton. The former was that of a domestic servant living in a house in Spilsby, where Enteric Fever has previously existed, and where the water supply was known to be bad, and was not used for drinking purposes.

CONTINUED FEVER.—Two cases of this obscure form of disease were notified during the year, and both were isolated. One occurred at Hundleby in June, and the other, which proved fatal, in Bolingbroke in November.

ERYSIPELAS.—I received 15 notifications of this disease. They occurred in various parts of the district and none were fatal. It scarcely seems necessary that Erysipelas should be notified in a Rural Sanitary district, as it rarely if ever takes on an epidemic form, and in most instances may be looked upon more as an acute skin affection than an actual blood-poisoning due to unsanitary surroundings or overcrowding.

DIARRHŒA.—Three deaths were registered under this heading. The first occurred at Ashby in February, where a whole family was suddenly taken ill with symptoms of Diarrhœa, and one child aged 12 years died. An inquest was held and a verdict returned of death from Choleraic Diarrhœa and Blood Poisoning. The sanitary arrangements did not seem to be the cause of the sudden illness in the family, and I am inclined to blame the eating of

some portions of a drowned sheep as the cause of the acute disorder. The other two, one at the age of 5, the other of 80, occurred in September, a time when a good deal of Diarrhœa prevailed throughout the country, probably due to meteorological causes.

INFLUENZA still hovers about England being most prevalent during the winter months. In this district eight deaths were put down under this heading, one occurring in January, two in April, one in November, and four in December. This comparatively slight mortality but inadequately represents the full extent of the baneful influence of Influenza, for it is highly probable, owing to the obscurity of some of its symptoms, and the multiplicity of its complications, that many a death primarily due to it is ultimately credited to some other disease. The reports made by Dr. Parsons, one of Her Majesty's Inspectors of the Local Government Board, have proved beyond cavil that Influenza is disseminated by direct intercourse between the sufferer and other persons. It ought therefore to be generally known that the man, who, while suffering from Epidemic Influenza, insists upon pursuing his daily business, disseminating the disease wherever he goes in public conveyances, business offices, places of worship, &c., is a public danger; and that if a patient when first attacked would keep to his room, it would not only be very much better for himself by favouring the action of remedies and preventing complications, but also would tend very materially to the prevention of the spread of the disease.

MALIGNANT PUSTULE OR CHARBON.—One of the provisions of the Contagious Diseases (Animals) Act is to the effect that the Veterinary Inspector shall, on finding a case of Anthrax, notify it to the Medical Officer of Health. On May 23rd, I received notice from Mr. Richardson, the Veterinary Inspector at Alford, of the existence of Anthrax at Cumberworth and at Alford. I attended a meeting of the Local Committee and recommended the immediate disinfection and burial of the carcase, and this was promptly carried out. Anthrax is one of the diseases known to be communicable from animals to man, and is generally very malignant. The human victims are for the most part those who have to do with slaughter-houses, tan-yards, and wool-sorting establishments, and the disease is transmitted to human beings either by direct inoculation or by insects which have been in contact with the bodies or carcasses of infected animals. The general direction is that every animal known to be infected should be at once destroyed and buried in lime; but I cannot help thinking that a far more effectual plan would be to submit the carcase to thorough cremation, for it is found that the specific germ of the disease lives and thrives in soil.

During the year I received altogether 232 notifications of infectious diseases, which I am sorry to say is a number far in excess of that of any previous year. Indeed during 1893 the number of notifications exceeded by 29 the total of the previous three years all put together.

Year.	Small Pox.	Scarlet Fever.	Diphtheria.	Membranous Croup.	Typhus Fever.	Enteric or Ty- phoid Fever.	Continued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	Total.
1890		38	3			3	1				10	55
1891		31	2	1		25	2				7	68
1892		48	10			5	1				16	80
1893		188	15			11	2				16	232



## SANITARY WORK.

The two principal works of drainage that were effected during the year were the one at Sutton-on-Sea and the other at Hogsthorpe.

At SUTTON a new nine inch pipe sewer was laid for 300 yards from the flushing chamber at the corner of the Huttoft road to a man-hole in the Alford Road, and this now takes the drainage of the houses in the west end of the town.

At HOGSTHORPE the drainage of Finsbury Square becoming blocked the old brick sewer was taken up and a new nine inch pipe sewer laid at a proper gradient to the outfall.

BURGH.—Before the end of last year a Parochial Committee was formed for the purpose of carrying out some necessary improvements in the Burgh sewage disposal ground, which had been recommended by your Surveyor. I am sorry to have to report that little or no action has been taken in this matter.

The WAINFLEET scheme in consequence of the difficulty in obtaining land for irrigation purposes makes but slow progress. This difficulty, however, has now been overcome, and we may fairly hope that this important work may shortly be carried out.

The following is the Inspector and Surveyor's report for the year 1893.

Number of nuisances reported ... ..	167
Number abated without formal notice ... ..	98
Number of formal notices served... ..	69
Number unabated at the close of the year ... ..	4
Total number abated ... ..	163
Number of legal proceedings taken ... ..	0
Houses reported unfit for human habitation ... ..	6
Houses placed in habitable repair ... ..	2
Houses rebuilt ... ..	2
Defective drainage to houses remedied ... ..	19
New drainage to houses ... ..	15
Cases of overcrowding reported ... ..	3
Cases of overcrowding abated ... ..	3
Houses cleansed and disinfected ... ..	69
Old privies removed and new ones erected ... ..	4
Old privies repaired and ventilated ... ..	6
New earth closets erected... ..	9
New water closets built ... ..	4
New dust bins erected ... ..	6
Old dust bins covered in ... ..	11
New pig-sties built... ..	7
Pig-sties cleansed and drained ... ..	14
Wells sunk for new water supply... ..	5
Wells cleansed and water supply improved ... ..	6
New water supply to houses ... ..	19
Samples of water collected for analysis ... ..	20
Schools closed by order ... ..	9
Schools ventilated ... ..	3
Schools cleansed and disinfected ... ..	4
Schools drained ... ..	2
Slaughter-houses inspected ... ..	18
Dairies, cowsheds, and milkshops inspected ... ..	46
Buildings erected under the Byelaws—Spilsby 5, Alford 2, Wainfleet 2, Sutton-on-Sea 8, Burgh 1, Winthorpe 3 ... ..	21
Buildings erected in other parts of district ... ..	8

In a previous report I ventured to prophesy that great damage would be done to the drinking water of Spilsby owing to the leaky condition of the mains allowing the escape of coal gas unless timely remedy were applied, and this prophecy, I am sorry to say received ample fulfilment during the past year. The occupants of certain houses on the Hundleby-road had their water supplies excessively contaminated from this source, and rendered quite unfit for drinking purposes. The matter was laid before the Gas Company, and active and efficient steps were taken to remedy the evil, and I am thankful to say with success.

The three cases of overcrowding reported were all abated, two by reducing the number of inmates, and the third by having a new bedroom built.

I have analysed the 20 samples of drinking water collected for analysis, and the results were such that in eight cases the water was classed as good, in six suspicious, and in six bad. The supplies from which the six bad samples came have been improved.

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### VITAL STATISTICS.

In 1893 the Births were 570 and the Deaths 388. The Birth-rate was 23·66 per 1000, and is lower

than that recorded in any previous year excepting 1890, and 2·69 below the mean rate in the ten years 1883 to 1892. The Death-rate was 16·10 per 1000, which is ·61 lower than the mean rate in the last ten years.

The average relation of Births to Deaths is 1·5 to 1; for 1893 1·5 to 1.

The Birth-rate in England and Wales in 1893 was 30·8 per 1000 population, and was only slightly higher than that of 1892.

The Death-rate which had been 19·5, 20·2, and 19·0 per 1000 in the preceding three years, was 19·2 per 1000 last year, corresponding with the mean rate in the ten years 1883-1892.

The Births were distributed according to quarters as follows :—

	LEGITIMATE.		ILLEGITIMATE.	
	MALES.	FEMALES.	MALES.	FEMALES.
Quarter ending March 31st	66	63	5	8
Quarter ending June 30th	66	68	1	4
Quarter ending Sept. 30th	71	69	3	7
Quarter ending Dec. 31st	61	72	4	2
	<hr/>	<hr/>	<hr/>	<hr/>
	264	272	13	21
	<hr/>	<hr/>	<hr/>	<hr/>
Total Legitimate ...	536	Total Males ...	...	277
„ Illegitimate ...	34	„ Females ...	...	293
	<hr/>			<hr/>
Grand Total	570	Grand Total	570	
	<hr/>			<hr/>

This is the smallest number of Births in the district that has ever been recorded. The number is 25 less than that of last year, and 41 below the average of the last ten years.

Average percentage of Illegitimate to Legitimate Births for the last ten years 8.29 ; for 1893, 6.34.

For purposes of comparison I shall follow the same plan as heretofore adopted, and arrange the deaths in two tables. The first gives the percentage according to age, the second the actual number according to class of disease ; and to each is added the average for the ten years 1881-1890.

Under	1893.		Average per centage for 10 years, 1881-90.
1 year .....	75 or	19.33 per cent. ....	18.53 per cent.
2 ,, .....	13 ,,	3.35 ,, .....	4.20 ,,
5 ,, .....	10 ,,	2.58 ,, .....	3.63 ,,
10 ,, .....	7 ,,	1.86 ,, .....	2.86 ,,
15 ,, .....	4 ,,	1.03 ,, .....	2.18 ,,
20 ,, .....	11 ,,	2.84 ,, .....	2.37 ,,
30 ,, .....	22 ,,	5.67 ,, .....	5.76 ,,
40 ,, .....	16 ,,	4.12 ,, .....	4.49 ,,
50 ,, .....	18 ,,	4.64 ,, .....	5.54 ,,
60 ,, .....	25 ,,	6.44 ,, .....	6.81 ,,
70 ,, .....	58 ,,	14.95 ,, .....	12.59 ,,
80 ,, .....	85 ,,	21.90 ,, .....	17.28 ,,
90 ,, .....	35 ,,	9.02 ,, .....	11.63 ,,
100 ,, .....	9 ,,	2.32 ,, .....	1.88 ,,

From this it will be seen that the infant mortality under one year is above the average, but out of the 75 deaths, 36 or close upon one half were due to developmental causes. Out of 570 Births, 75 or 13.16 per cent. died during their first year of life.

The deaths above 60 years continue to represent a near approach to half the total deaths.

Class	1893.	Average for 10 years, 1881—90.
I. Zymotic Diseases ... ..	27	24
II. Cancerous Diseases ... ..	27	26
III. Tubercular Diseases ... ..	30	54
IV. Diseases of Brain, &c. ... ..	66	71
V. „ Heart, &c. ... ..	44	40
VI. „ Lungs, &c. ... ..	34	65
VII. „ Stomach, Liver, &c. ... ..	19	25
VIII. „ Kidneys, &c. ... ..	10	12
IX. Childbirth, Diseases of Women, &c....	1	4
X. Diseases of the Skin &c. ... ..	1	0
XI. Debility, Atrophy, and Marasmus ...	21	17
XII. Developmental Diseases ... ..	19	19
XIII. Old Age ... ..	60	62
XIV. Violent Deaths ... ..	15	13
XV. Causes not specified ... ..	14	4

The 27 deaths in the class of Zymotic Diseases were made up of Measles 4, Whooping Cough 8, Enteric Fever 3, Continued Fever 1, Diarrhœa 3, Influenza 8, and these have already been alluded to. The excess of this class will thus be seen to be attributable to the three diseases Measles, Whooping Cough, and Influenza. The death-rate per 1000 of the seven principal Zymotic Diseases amounted last year to  $\cdot 79$ , and equalled the average of the last ten years.

The Death-rate for England and Wales for the same Zymotic Diseases was  $2\cdot 47$  per 1000 population, against  $1\cdot 90$  and  $2\cdot 00$  per 1000 in the preceding two years.

TABLE of DEATHS from the Seven Principal Zymotic Diseases during the last ten years.

	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.
Small Pox ...	—	—	—	—	—	—	—	—	—	—
Measles ...	—	1	—	8	—	—	1	—	—	4
Scarlet Fever ...	2	1	2	1	3	1	—	2	1	—
Diphtheria ...	39	28	8	1	3	1	—	1	3	—
Whooping Cough ...	11	5	—	1	2	5	13	—	1	8
Fever, Typhus ...	—	—	—	—	—	—	—	—	—	—
„ Typhoid or Enteric ...	4	1	4	2	3	—	1	6	1	3
„ Other or doubtful ...	—	—	—	1	—	—	—	—	—	1
Diarrhoea and Dysentery ...	6	—	4	—	3	2	—	—	1	3
Total Deaths from the 7 principal Zymotic Diseases ...	62	36	18	14	14	9	15	9	7	19
Deaths from other causes ...	506	384	365	369	416	392	420	442	342	369
Total Deaths ...	568	420	383	383	430	401	435	451	349	388
Death-rate per 1000 Zymotic Diseases	2·27	1·33	·70	·55	·55	·36	·60	·36	·29	·79
Death-rate per 1000 from all causes	20·86	15·55	15·04	15·17	17·17	16·15	17·67	18·47	14·39	16·10
Death-rate for England and Wales	19·6	19·0	19·3	18·8	17·8	17·9	19·2	20·2	19·0	19·2

From a Sanitary point of view the year that has just gone has been productive of much anxiety, owing to the excessive prevalence of Zymotic Diseases, and how far this prevalence has been connected with Meteorological influences is a problem difficult of solution. The effects of weather on vegetable life are easily recognisable and fully acknowledged, and it is more than probable that similar effects, modified in degree and more subtle in character, are produced on animal life. Excess of damp or of drought each is known to encourage special morbid conditions. The first predisposes to such affections as Diphtheria and Tubercular ailments; the last, by drying up water courses, helps to bring about contamination of air and drinking water, and so favours the dissemination of diseases known to be associated with these conditions. The great subject of congratulation is the comparative absence from our midst of that terrible scourge, Cholera.

I have the honour to be, Gentlemen,

Your obedient Servant,

FRANCIS J. WALKER,

Medical Officer of Health.

*Spilsby, January, 1894.*



## APPENDIX.

(A) TABLE of DEATHS during the year 1893, in the Rural Sanitary District of SPILSBY; classified according to Diseases, Ages, and Localities.

Names of Localities adopted for the purpose of these Statistics; public institutions being shown as separate localities.  (Columns for Population and Births are in Table B.)	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.						
	At all ages.	Under 1 year.	1 and under 5	5 and under 15	15 and under 25.	25 and under 65	65 and upwards
Registration Sub-District.							
SPILSBY .....	115	22	3	5	6	29	50
<i>The Workhouse</i> .....	13	...	...	1	...	5	7
ALFORD .....	106	24	11	1	5	19	46
WAINFLEET.....	65	18	5	1	4	16	21
BURGH .....	61	9	3	2	6	10	31
STICKNEY .....	28	2	1	1	2	11	11
Totals .....	388	75	23	11	23	90	166

TABLE OF DEATHS, ETC.—continued.

MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN UNDER FIVE YEARS OF AGE.																						
	Smallpox.	Scarlatina.	Diphtheria.	Membranous Group.	FEVERS.					Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhoea and Dysentery.	Rheumatic Fever.	Ague.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease.	Injuries.	All other Diseases.	Total.
					Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.													
Under 5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	20	25
5 upwds	...	...	...	...	1	1	...	...	...	...	2	...	...	...	...	...	11	...	8	3	64	90
Under 5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5 upwds	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...	...	10	13
Under 5	...	...	...	...	...	...	...	...	...	...	3	4	...	...	...	...	...	4	...	...	24	35
5 upwds	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	4	7	7	48	71
Under 5	...	...	...	...	...	...	...	...	...	...	1	4	...	...	...	...	...	1	...	...	17	23
5 upwds	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2	6	10	2	21	42
Under 5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	11	12
5 upwds	...	...	...	...	1	...	...	...	...	...	...	...	...	1	1	...	3	8	7	1	27	49
Under 5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	8
5 upwds	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	6	...	17	25
Under 5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	75	98
5 upwds	...	...	...	...	...	...	...	...	...	...	4	8	...	...	...	...	...	10	...	1	75	98
T.L. {	...	...	...	...	3	1	...	...	...	...	...	...	...	3	2	...	...	19	38	13	187	290



## APPENDIX.

## RAINFALL FOR 1893.

Month.	No. of days on which '01 or more fell.	Amount in inches.	Average for last 18 years.
January .....	17	1·99	1·90
February .....	19	3·64	1·95
March .....	6	·34	1·75
April .....	4	·22	1·82
May .....	9	1·12	2·12
June.....	8	1·95	2·18
July .....	16	2·28	3·11
August.....	15	1·35	2·75
September .....	13	1·05	3·03
October .....	15	1·87	3·46
November .....	22	3·31	2·04
December .....	18	2·05	2·38
Total .....	<u>162</u>	<u>21·17</u>	<u>28·49</u>











