

[Report 1893] / Medical Officer of Health, Stockport County Borough.

Contributors

Stockport (England). County Borough Council.

Publication/Creation

1893

Persistent URL

<https://wellcomecollection.org/works/bxgsh6tp>

License and attribution

You have permission to make copies of this work under a Creative Commons, Attribution license.

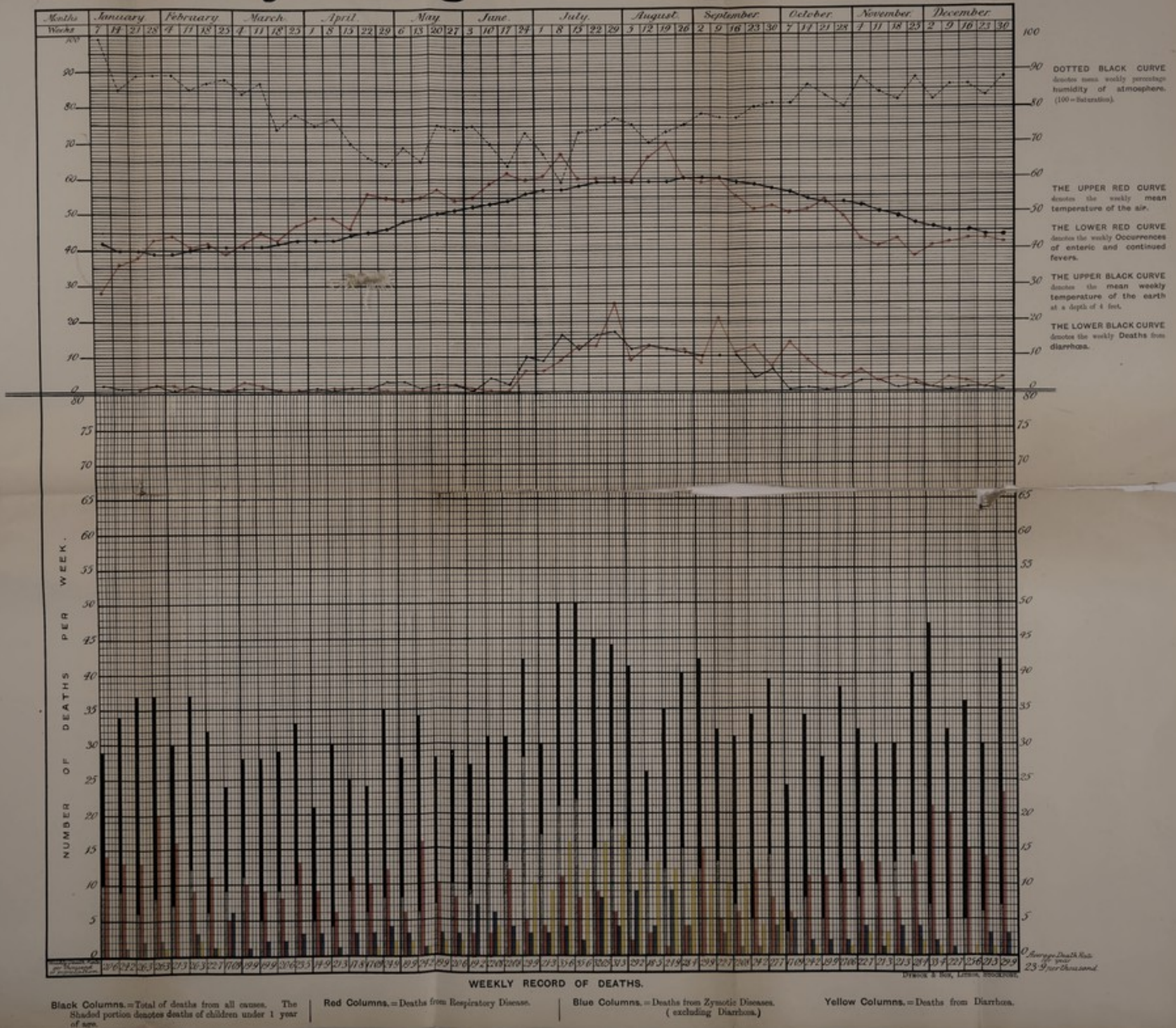
This licence permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. See the Legal Code for further information.

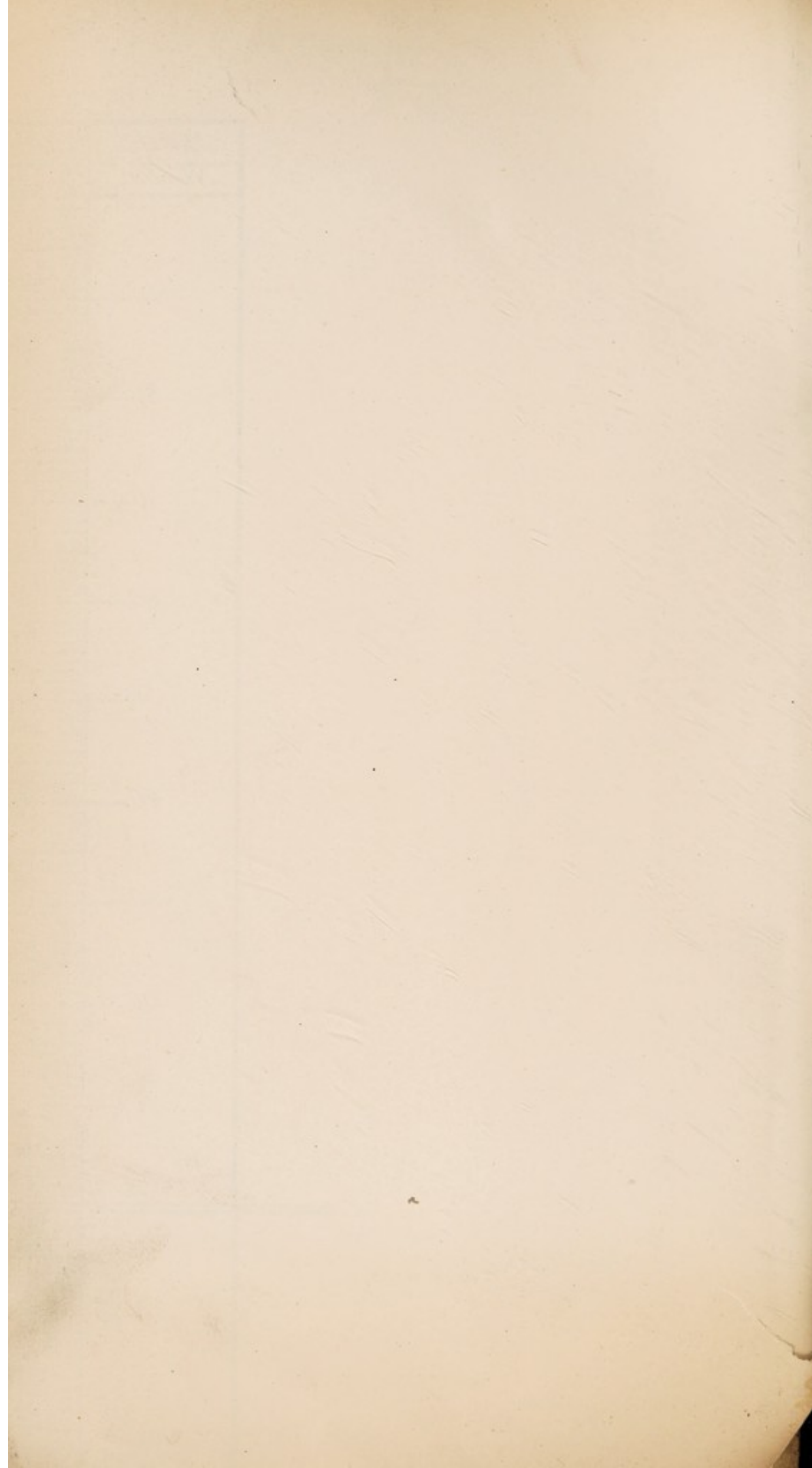
Image source should be attributed as specified in the full catalogue record. If no source is given the image should be attributed to Wellcome Collection.

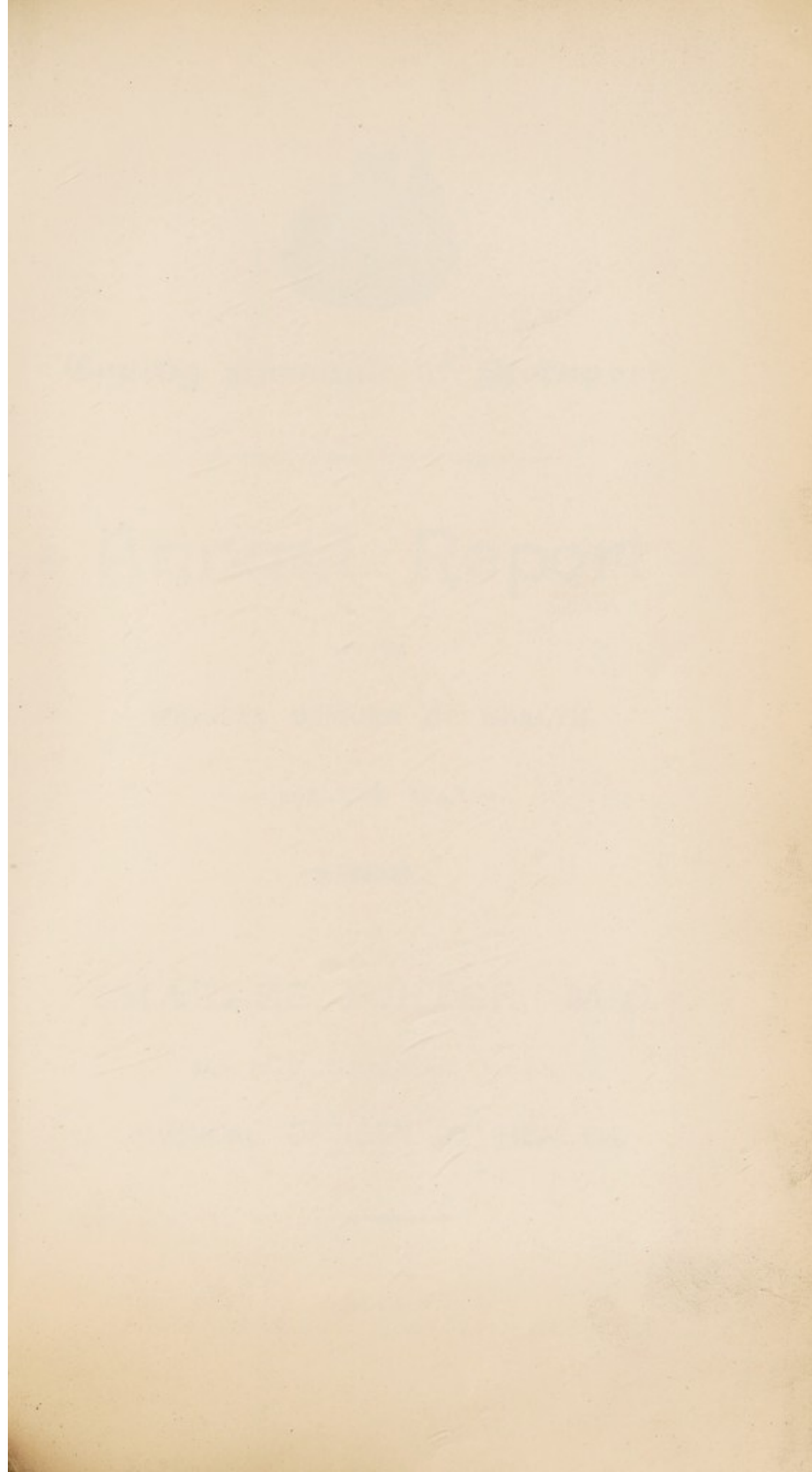


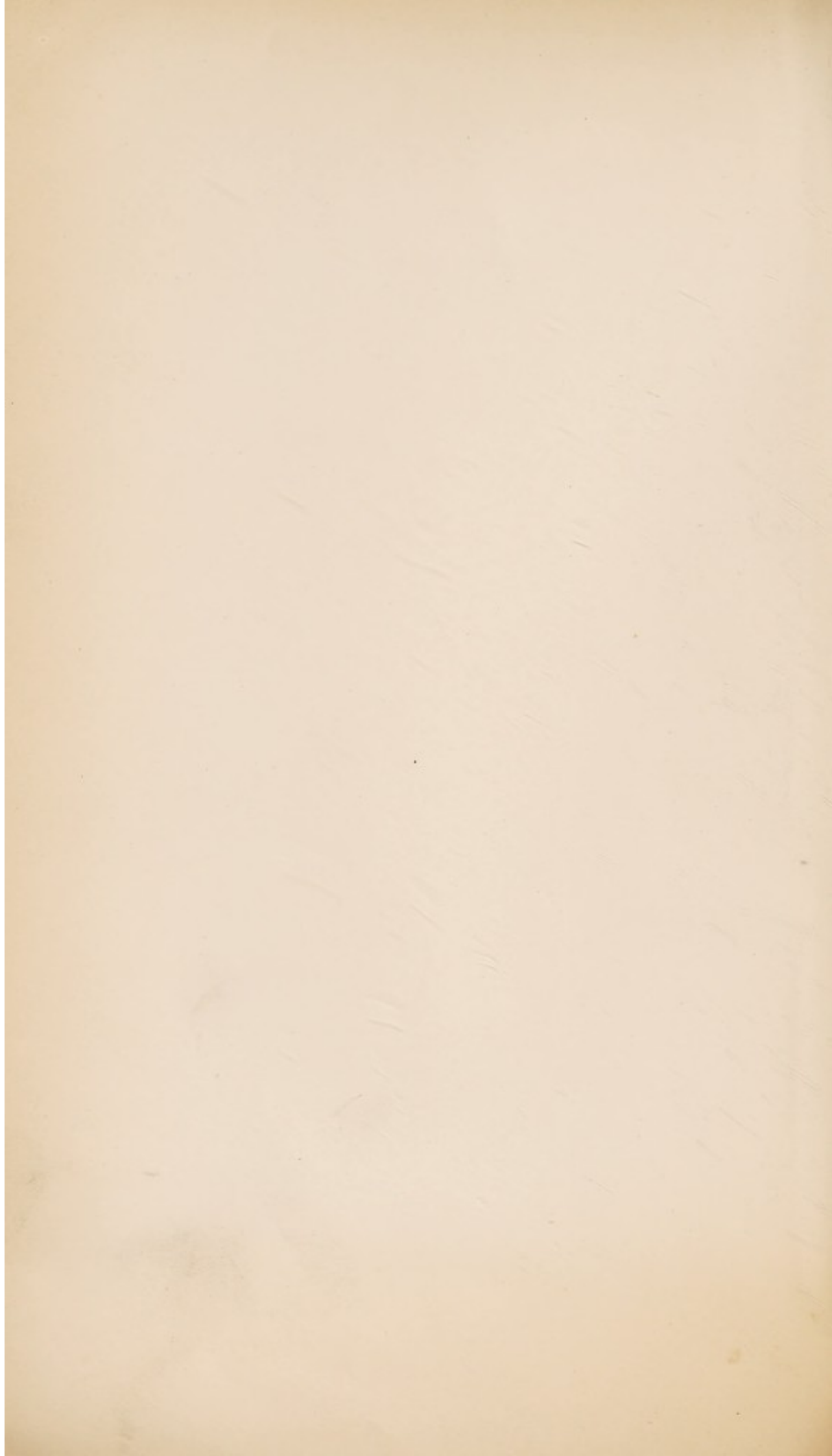
Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>

County Borough of Stockport, 1893.











County Borough of Stockport.

❖ Annual Report ❖

OF THE

MEDICAL OFFICER OF HEALTH.

— FOR THE YEAR —

1893.

BY

CHARLES PORTER, M. D.

BACH. SURG., D.P.H. CAMB., M.R.C.S.

MEDICAL OFFICER OF HEALTH.



Stockport :

WM. DYMCK & SON, LETTERPRESS AND LITHOGRAPHIC PRINTERS, WARREN STREET.

SANITARY COMMITTEE.

—:o:—

Chairman—COUNCILLOR BELL.

Vice-chairman—COUNCILLOR HANCOCK.

THE MAYOR.

ALDERMEN HALLAM, LEES, MELLOR.

COUNCILLORS ALLCOCK, ASTINGTON, BADDELEY, BOSTOCK, GOULD, HIDDERLEY,
JOHNSON, LEE, MARSHALL, MINSHALL, NEWTON, SIDEBOTHAM, STOTT,
WAKEFIELD, WILLIAMSON.

MONDAY—FIXED MEETINGS.

January 2	March 13	May 22	July 31	October 9
„ 16	„ 27	June 5	August 14	„ 23
„ 30	April 10	„ 19	„ 28	November 6
February 13	„ 24	July 3	Sept. 11	„ 20
„ 27	May 8	„ 17	„ 25	December 4
				„ 18

AT 3 O'CLOCK P.M.

—:o:—

HOSPITAL SUB-COMMITTEE.

—:o:—


Chairman—COUNCILLOR BELL.

Vice-Chairman—COUNCILLOR HANCOCK.

COUNCILLORS ALLCOCK, ASTINGTON, GOULD, HIDDERLEY, LEE,
NEWTON, MARSHALL, SIDEBOTHAM.

MEETINGS—WHEN REQUIRED.

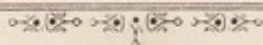
With Dr. Charles Porter's Compliments.



Digitized by the Internet Archive
in 2018 with funding from
Wellcome Library

<https://archive.org/details/b30137068>

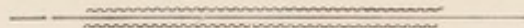
County Borough of Stockport.



ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH.



To the Right Worshipful the Mayor, Aldermen and Councillors of
the County Borough of Stockport.

MR. MAYOR AND GENTLEMEN,

I have the honour of submitting to you my Report upon the Health of your Borough during the year 1893, prepared in compliance with the orders of, and on the lines indicated by, the Local Government Board.

The pressure of other work including a detailed report on the water supply of the Borough; the necessity for subsequently making a careful inquiry into the causes of the heavy infant mortality of the town: of collating and reviewing the results of my investigations into upwards of 600 cases of infectious disease, and of acquiring the not inconsiderable local knowledge essential to a comprehensive sanitary review of your District, are amongst the special causes of the comparatively late date at which this Report is laid before you.

I desire to gratefully acknowledge the valuable support and assistance I have received from your late medical officer of health, Dr. Edwin Rayner, J.P., and the consideration and help which has been extended to me by the Chief Officials of your other Departments.

I beg also, to respectfully express my warm appreciation of the manner in which the Chairman and Members of the Sanitary Committee have invariably given serious and careful consideration to suggestions or recommendations affecting the Public Health which I have felt it my duty to lay before them, and I beg to thank them and the members of the Council in general for the encouraging and unfailing support with which they have favoured me during what was in many respects, an exceptionally trying year from a sanitary point of view.

I have the honour to be,

Gentlemen,

Your obedient servant,

CHARLES PORTER, M.D.,

Medical Officer of Health.

Public Health Office,

STOCKPORT,

1st NOVEMBER, 1894.

Physical and Geological Features.

PHYSICAL. Stockport is said to derive its name from two Saxon words, signifying "a castle in a wood." As regards its site an old writer quaintly says, "there is not in England a more irregular spot of ground than that upon which this town stands." Occupying the summit of an eminence overlooking the Mersey from the south are the Castle Yard and Market Place, which are believed to correspond with the site of the ancient town, and are approached from below by steep and narrow streets. In its growth the town has extended upwards and laterally on both the Cheshire and Lancashire sides of the valley through which flows the River Mersey formed by the junction of the two streams Goyt and Tame, the newest portions of the Borough now being at a considerable distance from the river.

GEOLOGICAL.* The Coal Measures, Permian Sandstone, Permian Marl and Pebble Beds form the solid rocks of the District. Overlying them is the Glacial Drift presenting great variations in thickness and in the proportion of the sand, gravel and clay of which the beds are composed. On the Cheshire side of the River Mersey, the greatest depth (111 feet) is said to occur near the junction of Hempshaw Lane and Higher Hillgate. From this point the thickness of the Drift diminishes from 90 feet under Castle Street to 47 feet at the western boundary of Edgeley. On the Lancashire side of the river the thickness of the Drift, which is about 40 feet at the junction of Coronation Street and Sandy Lane increases to nearly 127 feet at the Chemical Works at North Reddish. The order of superposition of the sand, gravel and clay composing the Drift also varies very much, and will be again referred to, as it can hardly be doubted that under certain circumstances the existing geological conditions exert an important influence on the health of the community.

* (*Vide "Notes on Glacial Geology of Stockport" by J. W. Gray, F.G.S.*)

Growth and Vital Statistics of Stockport.

The first written document of the existence of Stockport Castle is dated in the year 1173, in the nineteenth year of Henry the Second. About 1220 A.D., Stockport was constituted a free borough, by virtue of a charter granted at that time by the feudal lord, Sir Robert de Stokeport. Up to the passing of the Reform Act, of 1832, the township of Stockport, which was co-extensive with the Manor and Barony, comprised the whole town. With regard to statistics it is stated that in the years 1664 and 1665, respectively, 67 and 101 deaths were occasioned by the plague, and with reference to the latter half of the following century, the appended interesting information is given by Corry :—

STOCKPORT BILL OF MORTALITY.

YEARS.	MARRIED.	BAPTIZED.	BURIED.
1750	47	107	206
1770	93	110	209
1780	108	173	250
1790	224	316	369
1800	—	564	656

The earliest enumeration of the population was taken in 1754, and may be here quoted together with the statistics of the first 4 decades of the present century :—

STATISTICS OF THE TOWNSHIP OF STOCKPORT.

EXTENT 1740 STATUTE ACRES.

YEAR	INHABITED HOUSES.	FAMILIES.	MALES.	FEMALES.	POPULATION	ANNUAL RATEABLE VALUE.	YEAR.
						£ s. d.	
1754	995 <i>a</i>	741	—	—	3101	1879 0 0 <i>b</i>	1754
1801	2572	2965	6983	7847	14830	11284 5 0 <i>c</i>	1801
1811	3162	3563	7977	9568	17545	—	1811
1821	3405	4342	10495	11231	21726	44117 0 0 <i>d</i>	1821
1831	4973	5229	12221	13248	25469	52477 0 0 <i>e</i>	1831

a. In 1779.

c. In 1792.

b. In 1768.

d. In 1819.

e. In 1836.

In 1832 the constitution of the parliamentary borough was altered by statute and was made to include, in addition to the ancient township, portions of the townships of Cheadle Bulkeley, Cheadle Moseley, and Brinnington in the County of Chester, and of Heaton Norris in the County of Lancaster. In 1836 by the passing of the Municipal Corporations' Act, the Borough of Stockport was incorporated, and was included in the list of towns to be divided into seven wards with a council of fourteen Aldermen and forty-two Councillors. Lastly, in 1888 Stockport was constituted a County Borough by the Local Government Board Act of that year.

The particulars set forth in the following table record the general growth of the Borough during the fifty years, 1841 to 1891 :—

Census of	Population.	Increase or decrease per cent in previous decennium.	Inhabited Houses.	Uninhabited Houses.	Houses building.	Rateable Value.
						£ s. d.
1841	50,495	—	8,814	1,157	—	113,813 3 0
1851	53,835	6·6 increase.	10,568	—	—	106,732 0 0
1861	54,682	1·5 decrease.	11,298	—	—	113,936 13 10
1871	53,001	3·1 increase.	—	—	—	144,660 14 0
1881	59,544	12·3 increase.	13,007	1,558	74	189,450 0 0
1891	70,263	18·0 increase.	15,573	1,216	100	236,952 9 8

A study of these figures shows that during this time, 1841 to 1891, the increase in the population has been equal to 39·1 per cent of that in 1841. In the forty years, 1851 to 1891, the increase has been at the rate of 30·5 per cent. During the decennia, 1851 to 1861, and 1861 to 1871, the Crimean War, Indian Mutiny, the great Weaving Strike, and the Cotton Famine occurred, and it is perhaps not surprising that the population practically remained stationary; from the end of the later period, however, up to 1891, it has increased at the rate of 32·5 per cent. Finally the census returns of 1891 show an increase of 18·0 per cent over those of 1881.

**Information with regard to the County Borough of Stockport,
from the Census Returns of 1891.**

CIVIL PARISHES OR TOWNSHIPS.*

	Inhabited Houses.	Families or Separate Occupiers.	Population.
Brinnington (part of) ...	1,446	1,463	6,576
Cheadle (part of) ...	2,267	2,273	10,022
Heaton Norris (part of) ...	3,746	3,819	16,368
Stockport ...	8,114	8,222	37,297
County Borough of Stockport	15,573	15,777	70,263

* By "Civil parish or township" is meant a place in which a poor rate is separately levied.

THE ECCLESIASTICAL PARISHES OR DISTRICTS.

	Date of Formation.	Inhabited Houses.	Population.
STOCKPORT.			
St. Mary ...	—	2,853	12,807
St. Matthew with Brinksway	1844	2,402	10,586
St. Peter ...	1838	810	3,507
St. Thomas ...	1875	4,800	22,621
PORTWOOD, St. Paul	1846	1,538	7,061

MUNICIPAL WARDS.

Ward.	Houses.			Populations.		
	Inhabited.	Un-inhabited.	Building.	Persons.	Males.	Females.
Edgeley ...	4,104	190	27	18,889	8,616	10,273
Heaton Norris ...	3,746	229	6	16,368	7,577	8,791
Middle ...	1,779	246	—	8,050	3,851	4,199
Portwood ...	1,829	239	1	8,195	3,886	4,309
St. Mary ...	1,387	196	48	6,124	2,803	3,321
St. Thomas ...	2,728	116	18	12,637	6,056	6,581
Totals ...	15,573	1,216	100	70,263	32,789	37,474

* The Registrar General states that the above return of "uninhabited houses" includes in most cases, lock-up shops, factories, and offices.

TENEMENTS.*

TOTAL TENEMENTS, 15777.

Rooms in Tenement.	No. of Tenements with less than 5 rooms.	Number of occupants or tenements.											
		1	2	3	4	5	6	7	8	9	10	11	12 or more
1	159	45	63	25	15	6	3	2	—	—	—	—	—
2	1875	325	576	385	230	162	106	49	28	12	—	1	1
3	578	41	128	122	104	64	52	34	15	9	3	1	5
4	7963	249	1310	1563	1435	1209	867	641	366	186	91	33	13

* The Census instructions define a tenement as "any house or part of a house separately occupied by the owner or by a tenant."

AGES OF MALES AND FEMALES.

Age Period.	Males.	Females	Age Period.	Males.	Females.
Under 1 year	888	936	35 years & under 40 years	2,284	2,590
1 year and under 2 years	793	817	40 " " 45 "	1,909	2,129
2 years " 3 "	768	776	45 " " 50 "	1,488	1,783
3 " " 4 "	792	834	50 " " 55 "	1,245	1,629
4 " " 5 "	835	769	55 " " 60 "	901	1,198
Total under 5 years ...	4,076	4,132	60 " " 65 "	805	1,045
5 years and under 10 years	3,738	3,895	65 " " 70 "	500	694
10 " " 15 "	3,860	3,877	70 " " 75 "	337	418
15 " " 20 "	3,256	3,924	75 " " 80 "	146	205
20 " " 25 "	2,954	3,618	80 " " 85 "	53	65
25 " " 30 "	2,807	3,314	85 " " 90 "	6	21
30 " " 35 "	2,421	2,934	90 " " 95 "	3	3

Total Number of Males	...	...	32,789
" " Females	...	...	37,474
Total Number of Persons	...	...	70,263

The proportion of males to females is as 1 to 1.14, or about 7 to 8.

CONDITIONS AS TO MARRIAGE.

	All ages	under 15 years.	15-20	20-25	25-35	35-45	45-55	55-66	65 and upwards.
Unmarried { Males...	19,283	11,674	3,233	2,131	1,363	498	231	83	70
Unmarried { Females	21,703	11,904	3,828	2,483	1,963	754	435	221	115
Married { Males...	12,265	.....	23	814	3,778	3,530	2,270	1,308	542
Married { Females	12,462	.....	93	1,128	4,111	3,511	2,212	1,066	341
Widowed { Males...	1,241	.....	.....	9	87	165	232	315	433
Widowed { Females	3,309	.....	3	7	174	454	765	956	950

BIRTHPLACE OF MALES AND FEMALES.

Where born.	Males.	Females.	Where born.	Males.	Females.
Cheshire	19,665	21,803	Islands in the British seas	23	37
Lancashire	7,735	8,847	British Colonies, &c. ...	71	119
London	256	303	Foreign Countries ...	99	91
Other parts of England	3,681	4,699	At Sea	5	6
Scotland	179	220			
Ireland	1,075	1,349	Total	32,789	37,474

COUNTRY OF BIRTH OF FOREIGNERS.

United States of America	25	34	France	...	5	6
Germany	13	7	Greece ... ..	...	7	
Russia	11	6	Other European Countries	...	9	13
Poland	8	4	Others ... ..	...	2	2

OCCUPATIONS OF MALES AND FEMALES, AGED 10 YEARS AND UPWARDS,
IN THE URBAN SANITARY DISTRICT OF STOCKPORT.

Occupations.	Males.	Females.		Males.	Females.
I. Professional Class			2. Lodging, Food, &c.		
Civil Servants, Police, { Army, Poor-Law Officials { &c.	215	21	Hotel Keepers, Publicans, &c	123	78
Clerical profession	70	17	Brewers and Maltsters ...	82	4
Legal	68	1	Wine, Spirit & Beer Sellers	71	24
Medical and Dental	41	...	Milksellers	78	10
Veterinary	5	...	Butchers	243	24
Nurses	19	88	Fishmongers and Poulterers	56	10
Teachers and School Officers	83	233	Bakers and Confectioners	240	229
Students over 15	72	103	Grocers	412	131
Engineers and Surveyors ...	22	...	Greengrocers	134	34
Artists, Photographers, { Musicians, Literary, &c. {	145	40	Other purveyors of food ...	193	123
II. Domestic Class.			3. Textile.		
Indoor servants, char- { women, washing services, { &c.	172	2415	Woolworkers and Dealers	41	40
III. Commercial Class.			Silkworkers and Dealers ...	23	46
Merchants, Agents, Bankers	302	...	Cotton and Cotton Good { Workers	4493	7654
Commercial Travellers ...	129	...	Cotton and Calico Printers { and Bleachers	378	107
Commercial Clerks	540	51	Threadmakers	146	348
Railway-Engine Drivers, { Porters, Clerks, &c. {	850	8	Flax and Linen Workers ...	12	52
Coachmen, Cabmen, Carters	853	1	Cotton, Linen and Thread { Dealers	46	2
Messengers, Porters, { Watchmen, &c.	476	10	Hempworkers and Dealers	159	51
IV. Agricultural Class.			Others	204	14
Farmers, Labourers and { those engaged about { animals	437	8	4. Tanners, Curriers, &c		
V. Industrial Class.				187	41
1. Mechanical.			5. Clothing.		
Printers, Lithographers, { Bookbinders, &c.	257	31	Hatters	2764	1682
Machine-Makers, Fitters, { Turners, Millwrights {	554	6	Tailors and Milliners ...	317	815
Blacksmiths	169	...	Boot and Clog Makers ...	320	19
Other Metal Workers	501	9	Wigmakers and Hairdressers	70	3
Boiler and Engine Tenders	195	...	Others	37	112
Watch and Instrument { Makers and Dealers {	103	3	6. Miscellaneous.		
Housebuilding Trades ...	1650	9	Chemists and Druggists ...	46	5
Furniture Makers & Dealers	197	42	Tobacconists	81	112
Carriage and Cycle Dealers	97	1	Pawnbrokers	27	17
Brickmakers	118	...	Coalworkers and Dealers ...	294	1
			Labourers (various) ...	1497	31
			Other industrial occupations	801	254
			VI. Unoccupied Class.		
			Retired from business ...	382	218
			Pensioners	25	...
			Living on own means ...	159	571
			Others (over 10 years) ...	2522	13329

Statistics for 1893.

Total Area of the Parliamentary, Municipal and County Borough, 2200 Acres.

ESTIMATED POPULATION :—

Taking the natural increase of the population, *i.e.*, the excess of births over deaths since the census of 1891, as the measure of its growth, we get the figure 71,631, thus :—

Population in 1891	...	...	...	...	...	70,263
Excess of births over deaths from Census Day, 1891,						1,368
30th June, 1893	...	...	...	...
Total	...	...				71,631 71,631

This method, however, is fallacious, inasmuch as the important factors of immigration and emigration are ignored. Probably, the method of estimation least open to objection is one based upon the number of inhabited houses at Midsummer, 1892, which is arrived at as follows ;—

Inhabited houses at Census of 1891	...	...	...	15,573
Subtract houses demolished up to June 30th, 1893	...			40
				15,533
Add new houses built and inhabited to 30th June, 1893				736
				16,269

The average number of inhabitants per house at the time of the Census was 4.51. As there was some reason to believe that in new property the number of inmates per house was less than this figure, an enumeration was made as regards 418 new houses in various parts of the town, and it was found that the average number per new house was as nearly as possible 4. The course adopted, therefore, has been to multiply the number of inhabited houses built prior to April, 1891, *viz.*, 15,533 by 4.51. = 70,053

And to multiply the number of houses built since that date, *viz.*, 736 by 4. = 2,944

Total 72,997

The estimated population for the year 1893, is therefore taken at 73,000.

At the Census of 1891, the number of uninhabited houses was 1,216. In the middle of 1893, the returns of the Assistant Overseers of the Poor showed 870. This would appear to indicate that at the latter date, the number of empty house was less by 346 than in April, 1891. No correction has however been made in this respect, as the difference is believed to be due to the fact that the Census return included many lock-up shops, factories and offices, in which no one slept on Census night.

In the following Table, particulars as to the houses in each ward are set forth :—

	Edgeley.	Heaton Norris.	Middle	Portw'd.	St. Mary's	St Thomas's	Total.
Inhabited houses							
Built before April, 1891	4,089	3,735	1,768	1,821	1,387	2,724	15,533
„ since „ „	408	61	.....	42	151	74	736
Total	4,506	3,796	1,768	1,863	1,538	2,798	16,269
Uninhabited houses (per overseers' returns)	114	206	118	39	156	177	870

SUMMARY OF THE VITAL AND MORTAL STATISTICS OF THE BOROUGH AND EACH OF ITS WARDS FOR THE YEAR 1893.

WARD.	Average	Estimated Population	Population per acre	No. of births registered	Birth-rate	Corrected Deaths	Corrected Death-rate	No. of Deaths under 1 year of age	Infant mortality rate per 1000 births	* No. of deaths from 7 principal zymotic diseases	Zymotic Death-rate per 1000	Zymotic Death-rate per 1000 (excluding Diarrhoea)	No. of deaths * from Diarrhoea	Death-rate from Diarrhoea per 1000	No. of deaths from Consumption	Death-rate from Consumption	No. of deaths from other Lung diseases	Death-rate from other Lung diseases per 1000
MIDDLE	114	7974	69.9	236	29.5	238	29.8	61	258	43	6.01	2.3	29	3.6	24	3.0	50	6.2
EDGELEY	487	20113	41.2	649	32.2	427	21.2	112	172	87	4.3	2.2	41	2.03	42	2.08	77	3.8
ST. THOMAS'S	553	12581	22.7	397	31.5	312	21.7	89	224	57	4.5	2.7	23	1.8	34	2.7	52	4.1
ST. MARY'S	390	6864	17.6	256	37.2	186	27.09	74	289	34	4.9	2.03	20	2.9	16	2.3	40	5.8
PORTWOOD	174	8380	48.1	257	30.6	178	21.2	66	256	41	4.8	1.6	27	3.2	11	1.3	52	6.2
HEATON NORRIS	482	17088	35.4	546	31.9	404	23.6	120	219	89	5.2	1.6	60	3.5	41	2.3	70	4.09
TOTALS	2200	73000	33.1	2341	32.06	1745	23.9	522	222	356	4.8	2.1	200	2.7	168	2.3	341	4.6

* Deaths of Stockport residents in the Workhouse Hospital and in the Infirmary are here referred to in the wards in which they lived.
Deaths within the Borough of non-residents from out-townships are excluded. (see following table.)

** The "seven principal zymotic diseases" are smallpox, measles, scarlet fever, diphtheria, whooping cough, fever, (typhus, typhoid, and continued) and diarrhoea.

Marriages.

During the year 1893, the number of marriages was 486, the marriage-rate being equal to 13·2 per 1,000 persons living. The Registrar General gives the following figures for the year 1892 :—

England	...	...	...	15·4	per 1,000 persons living.
London	...	...	...	17·4	" " " "
Lancashire	...	...	...	16·4	" " " "
Rutlandshire	...	...	...	11·5	" " " "

Births.

The total number of births registered was 2,341. Of these 106, or 4·5 per cent were illegitimate. The birth-rate was equal to 32·06 per 1,000 persons living, as compared with an average rate of 34·0 per 1,000 for the previous ten years. For the year 1892, the birth-rate for the whole of England was 30·5; for Cheshire 30·4, and for Lancashire 32·2. It is noteworthy that the birth-rate was highest (37·2) in St Mary's Ward, and lowest (29·5) in the Middle Ward.

Deaths.

The total number of deaths registered was 1,810. Excluding 65 deaths (chiefly in the Workhouse and Infirmary), of persons not usually resident within the Borough, the death-rate from all causes per each 1,000 persons living was 23·9, as compared with a rate of 23·7 for the year 1892, and of 26·2 for the decennium 1883-1892. The highest death-rate (29·8) was in the Middle Ward, the lowest (21·2) in Edgeley and Portwood.

The following Table gives the annual death-rate per 1,000, as taken from the Registrar General's Report, for

(a)	England and Wales	...	Population 29 millions	...	19·2
	"	"	Rural	"	10½
	"	"	Urban	"	19
(b)	Thirty seven large towns		"	10	"
(c)	Sixty seven next		"	4	"

Appended are the vital and mortal statistics of ten other northern manufacturing towns, the general conditions of life in which are somewhat similar :—

	Birth Rate.	Death Rate.	Zymotic Rate.	Death Rate.	Rate of Infant Mortality under 1 year to 1000 births.
St. Helens	40·1	...	23·7
Wigan	40·6	...	24·2
Warrington	39·8	...	24·8
Bury	26·3	...	21·6
Ashton-under-Lyne	31·1	...	25·1
Bolton	33·03	...	23·9
Blackburn	30·9	...	23·2
Preston	35·1	...	26·4
Rochdale	24·8	...	20·09
Huddersfield	23·77	...	17·43
Stockport	32·06	...	23·9
				...	5·3
				...	5·1
				...	6·8
				...	3·5
				...	3·1
				...	4·42
				...	4·04
				...	6·01
				...	3·01
				...	1·38
				...	4·8

On Table A. * see appendix, the deaths registered during 1893 are classified under the age-periods in which they occurred, and the causes to which they were ascribed.

The deaths which occurred within the district of persons not belonging thereto may be thus tabulated:—

Place of death.	From Barnsley.	From Boaden.	From Bramhal	From Bredbury.	From Brinnington.	From Cheadle.	From Disley.	From Guide Bridge.	From Handforth	From Hyde.	From Liverpool.	From Marple.	From New Mills.	From Norbury.	From Reddish.	From Southport.	From Tarvin.	From Werneth.	Unknown.	Totals.
Union Work- house ...	...	4	1	2	1	6	...	...	1	27	1	2	...	...	...	...	...	2	4	51
Infirmary ...	...	1	1	...	...	1	1	...	...	...	...	...	1	1	2	...	1	...	1	10
Elsewhere ...	1	...	...	...	...	...	...	1	...	1	...	...	...	...	...	1	...	...	...	4
Totals ...	1	5	2	2	1	7	1	1	1	28	1	2	1	1	2	1	1	2	5	65

The deaths in the public hospitals of persons belonging to Stockport, exhibit the following Ward distribution:—

	Middle.	Edgeley.	St. Thomas'	St. Mary's.	Portwood.	Heaton Norris.	TOTALS.
Workhouse.	27	16	23	5	11	27	109
Infirmary.	8	4	4	6	5	7	34
Isolation Hospital.	1	12	6	2	4	2	27
TOTALS.	36	32	33	13	20	36	170

MORTALITY AT DIFFERENT AGES

527 deaths occurred amongst children under 1 year of age, being 29·1 per cent of the total deaths. This figure is extremely high and the subject will be again referred to. The deaths of children under 5 years of age numbered 781, or 43·1 per cent of all deaths registered. Between the ages of 15 and 25, 160 deaths occurred, being 8·8 per cent of the whole number. 575 deaths, or a percentage on the total of 31·7, occurred between 25 and 65, whilst above 65, the deaths registered were 294, being equal to 16·2 per cent of the year's mortality. Diseases of the respiratory organs and zymotic maladies stand prominently forward as the principal factors of last year's death-rate, the former class being responsible for 29·1 per cent and the latter for 20·3 per cent of all deaths, a special incidence of both on children under 5 years of age being observable.

UNCERTIFIED DEATHS.

There were 37 uncertified deaths during the year, of which 16 occurred in St. Mary's Ward, 15 in Portwood and 6 in Heaton Norris.

CORONERS' INQUESTS AND CERTIFICATES.

103 inquests were held during the year, 85 by Mr. Coroner Newton, and 18 by Mr. Coroner Price, who also issued in 6 instances a certificate dispensing with a formal inquiry.

* I am indebted to Messrs. Newton and Price for this information.

Infant Mortality.

The deaths of children under 1 year of age were 527, or nearly one third of the total number of deaths at all ages during the same period. The number of births was 2341 and consequently infant mortality was at the very high rate of 225 per 1000 births. The following infant mortality rates from the Registrar General's reports accentuate this fact;—

1892	{	Cheshire	...	...	...	...	151	per 1000 births.
		Lancashire	...	...	...	...	168	" "
1893	{	England	...	...	...	...	159	" "
		London	...	...	...	...	164	" "
		33 large towns	...	...	...	...	181	" "

In view of the above figures, and of the fact that infant deaths have added 7.2 to the total death-rate per 1000 persons living in the Borough, I have been led to examine the death returns for the past 5 years in the hope that an analysis of the causes of infant mortality, may afford some indication of the best means of removing them or limiting their operation.

On examining the accompanying table, it will be seen as regards age periods that:—

1.—The number of deaths on the *first day* of life is three times greater than on any succeeding day, and considerably exceeds the combined total of the deaths during the remaining days of the first week. On the second day mortality falls to one-third of its previous height, and thereafter continues to decline rapidly.

2.—The total number of deaths during the *first week* constitutes more than half of the deaths of the first month of life. The rate of infant mortality during the first week is, in fact, so high, that were it maintained uninterruptedly, every infant born would die before completing its 3rd month of life. In the second week, however, mortality falls to less than one-third of its previous height. In the third week there is, for some reason, no further diminution, but in the fourth week a fresh decline occurs.

3.—The infant mortality of the *first month* is nearly double that of any other month, and amounts to about one-fifth of all such deaths. In the second month it falls to about one half its previous height. In the third month, as compared with the second, there is scarcely any diminution, but thereafter infant deaths decrease gradually, except during the eighth month. This interruption, due to an increase of deaths from respiratory and digestive disorders, might not, however, be maintained in the statistics of a longer series of years.

Passing to the consideration of the *causes* to which these deaths were assigned, it will be seen as regards the first month, that while comparatively few deaths appear under the headings of definite diseases, 414 out of a total of 482 are ascribed to either (1). Premature birth and congenital malformation, (2). Debility, inanition, asthenia, congenital weakness, marasmus, and atrophy, or (3). Convulsions. In other words the great destruction of child life during the first month is almost entirely the result of a rapid weeding out of infants prematurely born or imperfectly developed, and of weaklings

ANALYSIS OF THE CAUSES OF INFANT MORTALITY IN STOCKPORT.
FOR THE 5 YEARS—1889 TO 1893 INCLUSIVE.

CAUSES.	1st day.	2nd day.	3rd day.	4th day.	5th day.	6th day.	7th day.	1st week.	2nd week.	3rd week.	4th week.	Under 1 month.	1 month, and under 2.	2 months, and under 3.	3 months, and under 4.	4 months, and under 5.	5 months, and under 6.	6 months, and under 7.	7 months, and under 8.	8 months, and under 9.	9 months, and under 10.	10 months, and under 11.	11 months, and under 12.	TOTAL.	
Premature birth and congenital malformation	62	14	8	6	4	2	3	99	15	8	1	123	7	5	2	4	2	3	1	1	...	...	2	150
Diseases of the respiratory organs including consumption ...	6	...	1	...	...	...	...	7	11	3	3	24	55	57	61	62	64	44	60	51	44	60	38	620
Debility, low vitality, inanition, asthenia, marasmus, atrophy	63	23	16	3	4	6	5	120	43	51	11	225	91	62	55	42	26	11	22	9	9	9	7	568	
Convulsions and nervous diseases	17	12	3	4	5	1	2	44	8	12	2	66	34	38	27	17	20	11	6	7	9	7	7	249	
Meningitis (including Tubercular)	...	...	...	...	...	...	...	...	...	...	...	...	2	7	4	13	11	11	11	10	4	3	5	81
Dentition ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	5	8	10	18	13	11	11	12	89
Diarrhoea and other gastro-intestinal maladies, due to errors of diet, polluted soil emanations and general neglect ... ..	...	...	...	...	...	...	1	1	5	7	4	17	43	59	53	55	52	28	34	31	25	12	10	419
Tabes Mesenterica (consumption of the bowels) ... ..	...	...	..	...	...	...	...	...	...	...	...	...	3	2	2	6	7	6	3	4	3	2	...	38
Other zymotic diseases— w.—Whooping cough. d.—Diphtheria. c.—Membranous croup. sc.—Scarlet fever. m.—Measles. t.—Typhoid. e.—Erysipelas.	1.w	2.w	3.w	3.w	8.w	1.w	7.w	7.w	10.w	6.w	11.w	8.w	9.w	12.w	85.w	159
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.m	2.m	5.m	5.m	1.d	14.m	17.m	1.c	3.d
	1.e	1.sc	...	1.c	1.c	2.d	10.m	1.sc	3.c	20
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.sc	6.m	...	...	...	63.m
Suffocation = s. Injury = I. Overlaid = o.	1.I 1.s	1.s	2.s 1.I	1.s 1.I	3.s 2.I	4.s 3.o	1.s 1.o	1.s 1.I	1.s	1.o	...	1.I	1.s	...	11.s 4.I 5.o	20
	
Other causes	4	1	...	...	...	2	1	8	5	3	3	19	14	10	6	4	5	4	2	3	4	2	1	74
TOTALS ...	154	50	28	14	13	11	12	282	89	85	26	482	260	250	216	219	206	143	170	149	133	133	106	2467	

TOTAL NUMBER OF BIRTHS DURING YEARS 1889 TO 1893 INCLUSIVE—11,453.

DEATHS FROM "OTHER CAUSES" INCLUDED *inter alia*:—18 syphilis, 14 during first three months: 7 icterus, five being in 1st month: 3 atelectasis: 2 intussusception, 5th and 7th months: 2 tuberc. peritonitis, 5th and 9th months: 1 volvulus, 5th month: 1 prolapsus recti, 10th month: 1 endocarditis (verified p.m.), 1st month: 1 hæmorrhage umbilical cord, 2nd day: 1 inflammation umbilicus, 11th day.

who come into the world in a scarcely viable condition. Undoubtedly this process is in some cases favoured and accelerated by want of knowledge on the part of the untrained women who so frequently undertake the duties of the lying-in chamber. In the second month mortality under the foregoing headings is much less, and more definite ailments begin to manifest themselves as causes of death. Diseases of the respiratory organs assume a prominence which is maintained throughout the year, this class of disease being credited with 25·1 per cent. of all deaths under one year of age, a larger proportion than that due to any other cause. Diarrhoea and other gastro-intestinal maladies cause many deaths in each of the twelve months, but appear to be specially fatal in the third, fourth, fifth and sixth. 419 deaths, or nearly 17 per cent. of all deaths under 1 year of age are ascribed to these diseases, the mortality from which has been shown by the Registrar General to be more than seven times greater in towns like Stockport than in the country.

With regard to zymotic disease, infants appear to enjoy considerable immunity during the first 4 months of life. Whooping Cough is by far the most fatal of this class and is returned as a cause of death as early as the 3rd week. Measles comes next; most of the deaths from this cause occurring in the 9th, 10th, 11th and 12th months. A few deaths are recorded from erysipelas, and in the later months from scarlet fever and diphtheria, but their number is small. Deaths from the irritation of teething (dentition) begin about the 5th month, and increase during the remaining seven. Inherited syphilis was returned as the cause of death in 18 cases, and of these 14 occurred during the first 3 months of life. There is good reason to believe that this figure does not represent the true state of affairs, for in as much as congenital syphilis as a cause of death debars from insurance benefits, death will in some cases be assigned to co-existing secondary symptoms or diseases.

Summarizing the foregoing, the chief cases of infant mortality are evidently these:—

- (1). Prematurity and low vitality at birth.
- (2). Respiratory disease.
- (3). Diarrhoea and digestive disorders.

1.—PREMATURITY AND LOW VITALITY AT BIRTH.

The Registrar General has found that the number of deaths resulting from these causes is relatively very much greater in textile manufacturing towns than in rural districts. This may possibly be in part the result of progressive physical degeneration of the mothers under the conditions of town life, which in comparison with country life entail greater liability to insanitary surroundings, and to the inception of phthisis, syphilis, anæmia, &c. There can, however, be little doubt that a most important factor is the employment of women at millwork during the latter months of pregnancy, and this cause suggests its own remedy.

2.—RESPIRATORY DISEASE.

Here again, there can be little doubt that the employment of women in the factories is attended with increased mortality from this cause especially in cold weather, for it is well known that women hastening to their work in the morning frequently lift their infants from warm beds, and carry them, often scantily covered, to the person who is supposed to care them during the mother's absence. At night a second exposure is probably incurred. Overcrowding, and the moral impossibility of securing proper ventilation in the homes of many of the poor is doubtless another predisposing cause of respiratory disease.

3.—DIARRHOEAL DISEASES.

The predisposing causes of infantile diarrhoea include (1) early weaning and injudicious hand-feeding, (2) insanitary conditions, such as (a) soil-pollution by slops, leakage from middens and drains, &c., (b) use of "made ground" containing excremental matters for building sites, (c) deficiency of air space and ventilation about dwellings when crowded on area or built back to back. The essential cause of the disease is believed to be a virulent chemical poison produced by a micro-organism which is capable of becoming air-borne, but which resides ordinarily in the superficial layers of the soil. In the organic matter of certain soils, and in food (inside as well as outside of the human body) this organism finds, especially under favourable conditions of temperature, material for its development and multiplication and therefore for the production of the chemical poison referred to. It is, of course, well known that diarrhoea mortality is greatest in hot weather, and having regard to the prolonged heat of the spring and summer of 1893, it is not surprising to find that diarrhoeal diseases were specially destructive, no fewer than 154 infant deaths having been registered, as compared with an average of 66 for each of the four preceding years. The principal remedial measures for checking infantile mortality obviously suggested by the foregoing considerations include :—

- (1). The abatement of insanitary conditions of residence.
- (2). The removal of evident causes of prematurity and of the low vitality of infants at birth.
- (3). The prevention of subsequent maternal neglect, the combined result of absence and ignorance.

Theoretically, the most important means of attaining the second and third objects is, undoubtedly, by checking the employment of child-bearing women in industrial occupations away from their homes, and by diffusing amongst them elementary knowledge as to the proper feeding and care of infants. The influence for evil of factory labour is strongly indicated by the comparatively low infantile mortality of large towns where married women are not generally employed in factories, and by the well known fact that during the Lancashire Cotton Famine and during the Siege of Paris, when the women had perforce to remain at home and suckle their children infant mortality decreased 40 per cent. The existing law provides (vide Factory and Workshop Act 1891 Section XVII) that "An occupier of a workshop or factory shall not *knowingly* allow a woman to be employed therein within 4 weeks after she has given birth to a child." A representation has recently been made to the Home Secretary by the British Medical Association as to the desirability of extending this period to three months, as infants would then have the chance of getting a good start in life and would thus be better able to contend against illness. While such a measure undoubtedly eminently desirable from a purely medical point of view, its practicability appears to be open to question as in many cases the earnings of the mother will constitute a large proportion of the total means of livelihood. Much deprivation and suffering from actual want would probably frequently follow, and for this reason it appears doubtful whether the suggested extension would be entirely beneficial, or even if enforced, that it would in any degree prevent the mothers seeking other work away from home, such as charring, &c. Again, as many deaths occur in the first month as during the second and third together. Seven-eighths of this first month's mortality is due to prematurity and variously named conditions amounting to low vitality at birth, causes unquestionably associated with the employment in mills of women advanced in pregnancy. It is therefore I submit, even more desirable to prevent female mill-labour during the later months of pregnancy than to extend to 3 months the period of prohibition after confinement.

From this point of view it would probably be sufficient, even theoretically, if the prohibition after confinement were fixed at two months, for that period would allow time for the completion of the natural changes in the womb which follow childbirth, and any interference with which predisposes to future premature births.

As regards the existing law on the subject there can be little doubt that it must, from its very wording be to a large extent a dead-letter. Apart from the fact that mill-managers and overlookers do not appear to be generally aware of its requirements, it is evident that in many instances employers may know nothing of confinements amongst their employes, and at present it is no part of their duty to make inquiries. Official notification of such births to employers is therefore essential, and this will necessitate prompter registration than is at present required, accompanied by a declaration as to the mother's employment. Such notification might with advantage emanate from the Health Department. It is, however, quite evident that the law might still be evaded by women seeking work at factories in which they were not previously employed, and this could only be met by requiring, as a matter of routine, all adult female applicants to make a declaration on the subject before receiving employment. It is clear, however, that whether recently-confined women resume mill-work at the end of one or of three months, it is most desirable that means should be devised to minimize the almost inevitable neglect to which their infants will then be subjected. It cannot be doubted that the means to this end is, *par excellence*, the provision of properly organized and regulated crèches or public nurseries, provided and controlled either by the Sanitary Authority, or by large employers of labour, or conjointly by employers and employes. These institutions should be self-supporting or nearly so. At present a certain number of infants are left at home in the charge of an elderly female relative too old for other work. In most cases in Stockport, however, a working mother pays as much as 4/- or even 4/6 per week to another woman, to whom such work is a means of livelihood, to receive and care her child during her absence. If the same amount per child were paid towards the expense of a properly managed crèche, it ought to command far better hygienic surroundings, attention to judicious feeding, and general supervision. In some cases the expenses might come upon the rates, but they would probably be few in number. It has well been suggested that the provision of crèches might be associated with the employment of matrons whose duty it would be to see that no recently confined women returned to work till she had either made proper provision for the case of her infant at home, or had arranged to send it to the crèche. Of course, the establishment and use of public nurseries will not prevent the morning and evening exposure of infants on their way to and from the crèches, but it will certainly not increase this risk and it may afford some opportunity of remonstrance in regard to carelessness in this respect. The utility of well managed institutions of this kind is in fact now generally admitted, and it is to be hoped that the recommendation of the British Medical Association, in regard to the passing of an adoptive Act enabling municipal authorities to provide these public nurseries may be acted upon.

Another most important and formidable factor in infant mortality is the lamentable ignorance of most working mothers as to the feeding and management of their children, as well as of the elements of domestic hygiene. Foul feeding-bottles and unwholesome or unsuitable diet of various kinds are, I believe, directly responsible for a very large number of infant deaths in Stockport. In Buckinghamshire this ignorance is combated by the house-to-house visitations of trained lady visitors. In Manchester, the Medical Officer of Health (DR. NIVEN) has, through the medium of Registrars of Births and Board School teachers, widely circulated in handbill form, careful directions couched in simple

language as to the feeding of infants. This measure was, I understand, adopted by Dr. Rayner J.P., some years ago in Stockport, and is about to be again resorted to, but the general diffusion of such knowledge must of necessity be gradual, and it is therefore highly desirable in the interest of succeeding generations that sound practical instruction in such matters, should be included amongst the subjects taught in every girls' school.

Dr. H. R. Jones, of Liverpool, has recently drawn attention to the widespread use of "Soothing Syrups" containing opium as a probably important cause of infant mortality. There is no doubt that considerable quantities of these noxious compounds are sold by small grocers, &c. Indeed, during the past year proceedings were in two instances successfully instituted in your Borough, for offences of this nature against "The Food and Drugs Act."

Before quitting this very important question of infant mortality, it is worthy of comment that whereas the deaths amongst infants born in wedlock is 22·5 per cent. of the births, those amongst illegitimate infants amounted to 59·4 per cent. of such births. This is a significant answer to a remarkable suggestion that infant mortality would be checked by the prohibition of early marriage.

Finally, infant insurance has been frequently associated with infant mortality, but this connection has probably been exaggerated. If the information given to your inspectors by parents, &c. is to be relied upon, 62·8 per cent of all children who died under 5 years of age were insured.

Zymotic Disease.

The year 1893 was marked by a quite exceptional prevalence of zymotic disease, no fewer than 683 cases having been reported under the Notification Act of 1889, as compared with a yearly average of 335 cases since the enforcement of the Act in February, 1890. In addition to the notifiable diseases, there was in the spring and early summer, a widespread outbreak of measles, whilst during the months of July, August and September, the mortality from diarrhoea was abnormally high. In the last quarter of the year, influenza of a mild type was very prevalent. The death-rate from the seven chief zymotic diseases was equal to 4.8 per 1,000 persons living, and of this figure, diarrhoea was responsible for more than half. The same rate for England and Wales was 2.47, for the thirty-three large towns 3.19, the sixty-seven next largest 2.84, and the remainder of the country 1.40. It will therefore be seen that a rate of 4.8 per 1,000 is unquestionably excessive, and the fact that in the Table on page 12, there are 4 towns with higher rates does not gainsay this statement.

The Infectious Diseases Prevention Act was adopted during the year, and came into force on 14th August, 1893.

INFECTIOUS DISEASE (NOTIFICATION) ACT, 1889.

CASES REPORTED DURING THE YEAR 1893.

	Smallpox.	Scarlet Fever.	Diphtheria.	Membranous Croup.	Typhus Fever.	Typhoid Fever.	Continued Fever.	Relapsing.	Puerperal Fever.	Cholera.	Erysipelas.
January	7	14	11	1	...	2	...	...	1	...	4
February	10	17	5	1	...	3	...	...	1	...	8
March	5	6	8	2	...	5	...	...	2	...	5
April	2	26	5	...	...	3	...	...	...	...	5
May	4	14	3	1	...	2	1	...	1	...	5
June	1	15	5	3	...	7	...	...	...	...	3
July	...	28	8	1	...	56	10	...	...	...	1
August	1	15	8	...	...	45	1	...	1	...	4
September	...	45	8	1	...	58	2	...	...	...	4
October	...	35	1	3	...	27	5	...	...	...	1
November	...	21	2	...	...	14	1	...	...	...	7
December	...	18	2	1	...	14	...	...	2	...	8
Totals ...	30	254	66	14	...	236	20	...	8	...	55

Smallpox.

Thirty cases of this disease occurred in the Borough during the year, in addition to two cases in which it was contracted by patients in the Isolation Hospital. Of these 30 cases, 22 were reported by medical practitioners, and the remaining 8 were detected by the Health Department.

Appended are the results, briefly, of inquiry into these cases:—

No.	Date.	Age	Address.	Days in Hospital.	Remarks.
1	Jan. 10	12	Lord Street ...	46 days ...	Debilitated from recent attack of typhoid 13 days before onset of smallpox attended public entertainment where many strangers were present.
2	" 12	28	Briscoe Street ...	65 days ...	Brewery carter engaged in delivering beer in infected districts.
3	" "	39	Workhouse ...	46 days ...	Resident of common lodging-house in Hillgate
4	" 16	36	Larkhill Road ...	43 days ...	Had been working at Portwood Bridge as mason. Source of disease not clear.
5	" 23	40	Lord Street ...	15 days ...	Traceable to case No. 1.
6	" 25	36	St Mary's Gate ...	53 days ...	Traceable to case No. 1.
7	" 28	38	Workhouse ...	29 days ...	Tramp from Sale.
8	" 30	37	Larkhill Road ...	14 days ...	Tended case No. 4. Persistently refused re-vaccination. Died.
9	Feb. 1	35	King Street East ...	20 days ...	Itinerant Music-hall Singer. Came from Bury whilst suffering from smallpox, which was probably contracted at Ratcliffe.
10	" 4	35	Workhouse ...	21 days ...	Tramp from Manchester.
11	" 7	28	do. ...	...	Tramp from Bury.
12	" "	31	do. ...	...	Tramp from Manchester, being treated for skin disease.
13	" 9	36	do. ...	...	Inmate of common lodging-house.
14	" 11	30	do. ...	...	Person of irregular and vagrant habits.
15	" 14	33	Birch Street ...	44 days ...	Inmate of common lodging-house.
16	" "	34	Birch Street ...	24 days ...	Inmate of common lodging-house.
17	" 20	—	Workhouse ...	...	Tramp.
18	" 28	35	Birch Street ...	8 days ...	Inmate of common lodging-house. Slept in same room as cases 13, 15 and 16. Persistently refused re-vaccination. Died.
19	Mar. 6	24	Royle Street, Higher Hillgate ...	14 days ...	Had worked in corridors of Isolation Hospital a short time before, and had declined re-vaccination.
20	" 7	39	Birch Street ...	...	Had tramped through Burnley, Blackburn and Manchester.
21	" 13	28	} Backwater Street, } Portwood ...	26 days ...	These were pitsinkers, out of work, on tramp. Had been sleeping in common lodging-houses, and probably contracted the disease at Oldham.
22	" "	33		26 days ...	
23	" 30	50	Lodging-house, Middle Hillgate...	29 days ...	Inmate of common lodging-house. Case somewhat doubtful.
24	Apl. 14	33	William Street ...	21 days mild	13 days before onset had attended funeral in village where disease was prevalent.
25	" 30	20	George Street, Hall Street ...	28 days mild	Came, suffering from smallpox from an infected house in Ardwick.
26	May 5	—	Workhouse ...	...	Tramp.
27	" 9	40	New Zealand Road ...	21 days mild	Bookbinder at Free Library. Case doubtful.
28	" 17	25	Buckingham Street, Heaviley ...	21 days mild	Came from same infected house in Ardwick as case 25.
29	June 1	44	William Street ...	32 days d'scr.	Infected from case No. 24.
30	Aug. 24	30	Newbridge Lane ...	17 days d'scr. average 28 dys	Source not clear.

Twenty-one of the foregoing thirty cases were separate and independent introductions of the disease. Ten of these sufferers were tramps; 2 were inmates of common lodging houses frequented by tramps; 1 was an itinerant music hall singer; 2 were infected in Ardwick; 1 had been at a funeral in an infected village 13 days before; 1 had been delivering beer in infected districts; and the origin of the remaining 4 was not clear. Incidentally it may be mentioned that the eruption on one of these sufferers was being treated as skin disease with sulphur lozenges by a chemist, and the nature of the case was not detected until the man's increasing illness forced him to send for a doctor.

As regards the secondary cases which followed the foregoing, it is a matter for congratulation that they numbered only 9, and it cannot be doubted that to the prompt and vigorous action of the Sanitary Committee in dealing with the outbreak, is due the fact that in 1893 Stockport remained comparatively unscathed in the midst of the sea of smallpox which affected neighbouring districts.

The preventive measures adopted included the following:—

(1). The establishment in different parts of the Borough, of 9 stations open in the evening for free vaccination, principally at the surgeries of medical men willing to undertake the work.

(2). The wide distribution of handbills throughout the town, setting forth in simple language the principal symptoms of smallpox, the necessity for re-vaccination, and where it could be obtained.

The co-operation of the Press and of employers of labour in giving further publicity to this notice, was also solicited.

(3). A nightly inspection between 2-30 p.m. and 11 p.m. of every common lodging-house in the town was organized. This led to the early detection and prompt removal of several cases, and kept the lodging-house keepers on the alert. In addition, every case of illness of any kind occurring in any lodging-house, was by arrangement reported at the Health Office.

(4). A medical man was employed to accompany the inspectors to the common lodging-houses to effect the re-vaccination of as many of the inmates as could be induced to submit thereto. The vaccinator was supplied with lymph, and paid 2/6 for every vaccination he effected. In this way over 70 of the habitués of these lodging-houses, who are specially liable to contact with infected strangers, were by vaccination protected themselves, and thereupon to a considerable extent ceased to constitute a standing menace to the health of inhabitants at large.

(5). The Medical Officer of the Workhouse (Dr. W. B. Bale) was requested to be good enough to satisfy himself as to the condition of all casuals before permitting their discharge into the town. This he kindly agreed to do.

In addition to the above, thorough disinfection of infected houses and articles was carried out, and inmates who had been exposed to infection were in most cases induced to submit to re-vaccination. There were, however two notable exceptions; one of these, A. B. had been nursing a case of smallpox which occurred on January 16th in a large family of which A. B. was a member. The patient was removed to the Isolation Hospital, and except A. B., all the inmates of the house who required re-vaccination, submitted to it, A. B. persistently refusing. On the 29th January A. B. only, of the whole family, was

attacked with the disease, and after acute suffering died on the 12th February, leaving a widow and several young children unprovided for. The other case was that of an inmate of a common lodging-house, who shared a bedroom with 2 persons who were removed to hospital suffering from smallpox on the 14th February. This man refused repeated offers of re-vaccination, sickened with smallpox on the 28th February, and died from the disease in the Isolation Hospital.

The following are the facts with regard to the 2 cases of smallpox, which occurred in the scarlet fever wards of the Isolation Hospital :—

On January 13th C.D. was admitted to the Isolation Hospital, suffering from scarlet fever. On February 15th this child presented a papular eruption, which rapidly became typically that of smallpox. As minute precautions had been ordered and adopted to prevent communication between the scarlet fever and smallpox pavilions, a searching investigation was made into the occurrence, and it was elicited that an attendant had secretly kept a cat in the scarlet fever pavilion, and that the cat had been seen at the smallpox end. This vehicle of infection was effectually eliminated, the ward thoroughly cleansed with corrosive sublimate solution, and fumigated while damp with sulphur. On February 28th, however, a second case of smallpox occurred in the same scarlet fever ward, from whence the patients were again immediately removed, and the disinfecting process repeated. Happening at this time to go into the ward (then empty) of the smallpox pavilion, which is nearest to the scarlet fever end, a smell of sulphur was noticed to be distinctly perceptible, and on examination a large aperture was found in the floor at one end of the ward, through which the hot water pipes made their exit, a similar opening existing in the floor of the scarlet fever ward. By getting beneath the floor and placing lights beneath each of the apertures referred to, the existence of a subterranean passage communicating with both pavilions was established, and on pouring oil of peppermint and boiling water through the aperture at the smallpox end its odour soon became strongly perceptible at the scarlet fever end. Evidently the higher temperature of the scarlet fever ward, which was in use, had aspirated infected air from an empty ward of the smallpox pavilion, through this underground passage for the hot water pipes, to the scarlet fever end. This structural defect having been remedied, no further cases of secondary smallpox have since occurred.

With reference to isolation, it may be stated that of the 30 cases reported, 21 were removed to the Isolation Hospital; 8 pauper cases were sent by the guardians to Hyde Hospital, and the last case of the year which occurred on the 24th August, was isolated at Whitehill House, both pavilions of the Isolation Hospital being at the time in use for cases of other infectious diseases.

As regards the very large extent to which vagrants and their haunts (common lodging houses and casual wards) are responsible for the spread of smallpox, the experience of Stockport is in accordance with that of the Kingdom generally, for during 1893, no less than 14 out of the 21 fresh introductions were traceable to these agencies. In the existing state of the law, it is practically impossible to check the reckless spread of disease by vagrants, and it is therefore very desirable that Sanitary Authorities should possess further powers for this purpose especially in regard to compulsory detention for medical inspection, disinfection, and re-vaccination when necessary.

Vaccination.

The following figures relate to primary vaccination of infants during the decennium 1884-1893 in the three registration districts of Stockport, which include in addition to the Borough, portions of Heaton Norris and Brinnington outside the Borough :—

Year ending 31st December.	No. of Births registered.	Successfully Vaccinated.	Inusceptible of Vaccination.	Had Smallpox.	Dead Un-vaccinated.	Postponement by Medical Certificate	Removal to districts the Vaccination Officer of which has been duly apprized.	Removal to places unknown or which cannot be reached and causes not having been found.	Unaccounted for.
1884	2476	2013	1	...	340	8	14	72	30
1885	2465	1985	4	...	333	9	14	87	33
1886	2637	2146	8	...	318	17	13	97	38
1887	2603	2156	6	1	293	22	18	72	35
1888	2520	1939	7	...	359	23	27	115	50
1889	2644	2127	12	...	318	31	21	107	28
1890	2551	1917	9	...	392	35	22	125	51
1891	2700	2035	5	...	377	46	26	142	69
1892	2644	1935	3	...	362	81	26	169	68
1893	2682	1755	12	...	367	137	36	135	239
Totals...	25,922	20,008	67	1	3459	409	217	1121	641

I am indebted to the courtesy of C. F. Johnson, Esq., Solicitor, Clerk to the Guardians, for these figures.

Continued Fevers.

TYPHUS : ENTERIC OR TYPHOID, AND CONTINUED

Typhus Fever.

One case of this disease was notified in the Spring, the sufferer being a tramp who exhibited a profuse dusky rash on the thighs and lower part of the abdomen, and lay in a condition of stupor. A day or two later the typical eruption of smallpox appeared, and the notification was cancelled by the medical attendant.

In the last week of December, two cases of typhus were verbally reported to me from Heaton Norris District. On visiting them with the medical attendant, we arrived at the conclusion that they were not manifestations of this disease.

Enteric and Continued Fever.

236 cases of enteric or typhoid fever, and 20 cases of continued fever were reported during the twelve months. 49 deaths resulted, representing a case mortality of 19·1 per cent. and an annual death rate per 1000 persons living of 0·67, as compared with 0·24 (from "*continued fevers*") for the thirty-three large towns, and of 0·17 for London during the same period.

Upon inquiry into the past occurrences of typhoid fever in Stockport, it appears that during the decennium 1883 to 1892, 214 deaths were registered from this cause, the annual mortality varying from 12 in 1883, to 35, 35 and 31 in 1886, 1887, and 1888 respectively. Upon an estimated population of 65,977 in 1887 these 214 deaths represented a mortality of 0·32 per 1000 per annum, which is appreciably greater than the mean annual rate of 0·22 for England and Wales during the period 1881 to 1885.

If it be assumed that the average proportion of deaths to recoveries during the decennium 1883 to 1892 was the same as it was during the summer of 1893, viz., 1 to 5·5, an estimated decennial total of 1177 cases is arrived at, the highest annual estimated totals being 192, 192, and 170 in the years 1886, 1887, and 1888. Although in none of the years, the returns of which have been considered, has the number of cases of typhoid fever attained that of the recent outbreak, owing presumably to the absence of some factor (possibly the meteorological) which has this year favoured the diffusion of the disease, the figures given are nevertheless such as to indicate a significant degree of "endemicity" of the disease in Stockport and to leave little cause for surprise that under favourable conditions the usual prevalence has assumed almost the dimensions of an epidemic.

In Table A. are set forth the particulars of the typhoid deaths from 1883 to 1893, and of the cases notified, since the adoption of the Notification Act.

TABLE (A).

Summary of occurrences and mortality from 1st January, 1882, to 31st December, 1893.

Wards.	Typhoid Deaths 1882-92.	Estd. Average population 1882-92 (say 1887).	Typhoid cases and deaths.								Population 1891.	Average 1893.
			1890		1891		1892.		1893.			
			cases from Feb.	deaths.	cases.	deaths.	cases.	deaths.	cases.	deaths.		
Middle	33	8,858	7	3	9	1	10	2	40	6	8,050	114
Edgeley	52	14,901	13	2	13	4	19	5	103	25	18,889	487
St. Thomas's	52	12,787	6	7	21	4	14	6	37	8	12,637	553
St. Mary's	19	6,604	9	...	14	3	5	...	20	1	6,124	390
Portwood	8	7,187	2	...	2	1	3	2	20	5	8,195	174
Heaton Norris	50	15,640	24	4	18	4	11	2	36	4	16,368	482
Totals	214	65,977	61	16	77	17	62	17	256	49	70,263	2,200

With regard to the year under notice, only 17 cases of enteric fever were reported from January 1st to June 18th, all being apparently scattered and isolated occurrences without any suspicious grouping in any special locality. The week ending Saturday, June 24th, in which six cases were notified may therefore be fairly taken as the commencement of the outbreak. On the chart affixed to this report, are indicated the number of cases reported in each week of the year, and in Table B. is an analysis of these cases.

TABLE (B).

Analysis of Typhoid Fever occurrences and mortality from January 1st, to December 31st, 1898.

Age period.	Sex.	Cases notified.				Deaths.				Percentage mortality.
		At Home.	In Isolation Hospital.	In Union Hospital.	Total.	At Home.	In Isolation Hospital.	In Union Hospital.	Total.	
1-5	Males	3	...	...	10	...	...	...	1	10.0
	Females	7	..	...		1	...	...
5-15	Males	29	14	2	86	1	1	...	6	6.9
	Females	27	12	2		3	1	...		
15-25	Males	35	23	1	86	4	6	...	18	20.9
	Females	15	9	3		5	3	...		
25-45	Males	17	9	5	64	8	2	1	18	28.1
	Females	16	13	4		4	1	2		
45 and upwards.	Males	1	1	...	10	...	...	1	6	60.0
	Females	5	3	...		4	1	...		
Totals	Males	85	47	8	140	13	9	2	24	17.1
	Females	70	37	9	116	17	6	2	25	21.5
Grand Totals	Both Sexes	155	84	17	256	30	15	4	49	Total percentage mortality.
										Treated in Hospitals
										Treated at Home
										Males 15.2
										Females 24.2
										Both sexes 19.3
										18.8
										PERCENTAGE MORTALITY FROM ALL CASES 19.1

Inspection of Table B, shows as regards the Stockport outbreak, at any rate—

- (1). That the proportion of males to females attacked is nearly as 7 to 6.
- (2). That the age period of greatest susceptibility of females is from 5-15, and of males from 15 to 25.
- (3). That mortality was considerably higher amongst females.
- (4). That the percentage of recoveries of patients treated in hospital is much greater amongst females than males. I am inclined to believe that an

explanation of this result may be found in the fact that females of the poorer classes, having no one to nurse them when taken ill, seek hospital treatment sooner than do males, who have frequently been admitted almost moribund, having been tended by their female relatives till their chance of recovery seemed almost hopeless.

(5). That the total percentage mortality of all cases treated in hospital is one-half per cent. lower than that of those treated at home. Having regard to the seriousness of most of the former class of cases, and also to the detrimental effects of the actual process of removal, this result is not surprising.

In a Special Report presented to you on 8th August, 1893, the circumstances of the epidemic prevalence of the disease were considered at some length. It was demonstrated that the great majority of cases were remarkably grouped in the vicinity of the highest points of the respective steep-gradient main sewers of the districts of Edgeley, of the Middle and St. Thomas's Wards, and of Heaton Norris. It was stated that numerous complaints were received of the foul smells from the street grids and ventilators in these districts specially, and it was pointed out the exceptional heat and drought probably constituted a most important factor in the causation of the outbreak, by reducing the self-cleansing powers of the sewers and favoring the development of the specific enteric fever poison in stagnant sewer deposits polluted subsoils and privy contents. I was subsequently led to consider the influence of the lowering and diminished circulation of ground-water, which must have obtained during the dry hot summer, and in doing so I received invaluable assistance from Mr. J. W. Gray, F.G.S., who is thoroughly acquainted with the geological features of the District.

From a paper, by Mr. Gray, on the "Glacial Geology of Stockport," it appears that overlying the deep rocks (Coal Measures, Permian Sandstone, Permian Marl, and Pebble Beds) is a layer of Glacial Drift (sand, gravel, and clay). At that part of the borough, most distant from the river on each side, the clay is superficial. Speaking generally, as it approaches the escarpment of the valley, this clay becomes subjacent to layers of sand and gravel of varying thickness, beneath which it passes to the river, the depth at which it lies varying in such a manner that it may almost be said to form basins occupied by the superjacent sponge-like sand and gravel which is so eminently capable of soaking up and retaining leakage from drains and middens.

Now, under ordinary circumstances, the flow of ground-water towards the escarpment of the valley cleanses this polluted subsoil to a greater or less extent, but during the past summer, with lowered and probably almost stationary ground-water, no such purifying agent has been in operation. It is certainly remarkable that the three areas of special incidence of the disease are just above the escarpment of the valley, the houses and middens being built on and in sand and gravel, whilst in those districts of the borough where a deep layer of clay is superficial to the sand and gravel, and from whence liquid pollution will consequently tend to flow in the direction of the valley's incline, comparatively few cases have occurred. This circumstance appears to me to have an important and obvious significance.

The relationship which Drs. Ballard and Tomkins' researches have established between the temperature of polluted subsoils and the occurrence of summer diarrhoea, as well as the unquestionably close connection of that disease with enteric fever, have suggested to me the desirability of comparing the curves of the typhoid incidence diarrhoea mortality, mean weekly temperature, and mean weekly readings of the four-foot earth thermometer. This I have been enabled to do through the kindness of Dr. Tatham and of Mr. Midgley, F.R.Met.S., of Bolton, who has interested himself in the subject.

County Borough of Stockport.

MAP

Showing special incidences of Epidemic of Enteric and Continued Fever during 1893, in vicinity of upper ends of certain steep gradient main-outlet sewers.



Reference.

A RED DOT DENOTES POSITION OF EACH TYPHOID CASE.

A DARK BLUE LINE DENOTES MAIN SEWER.

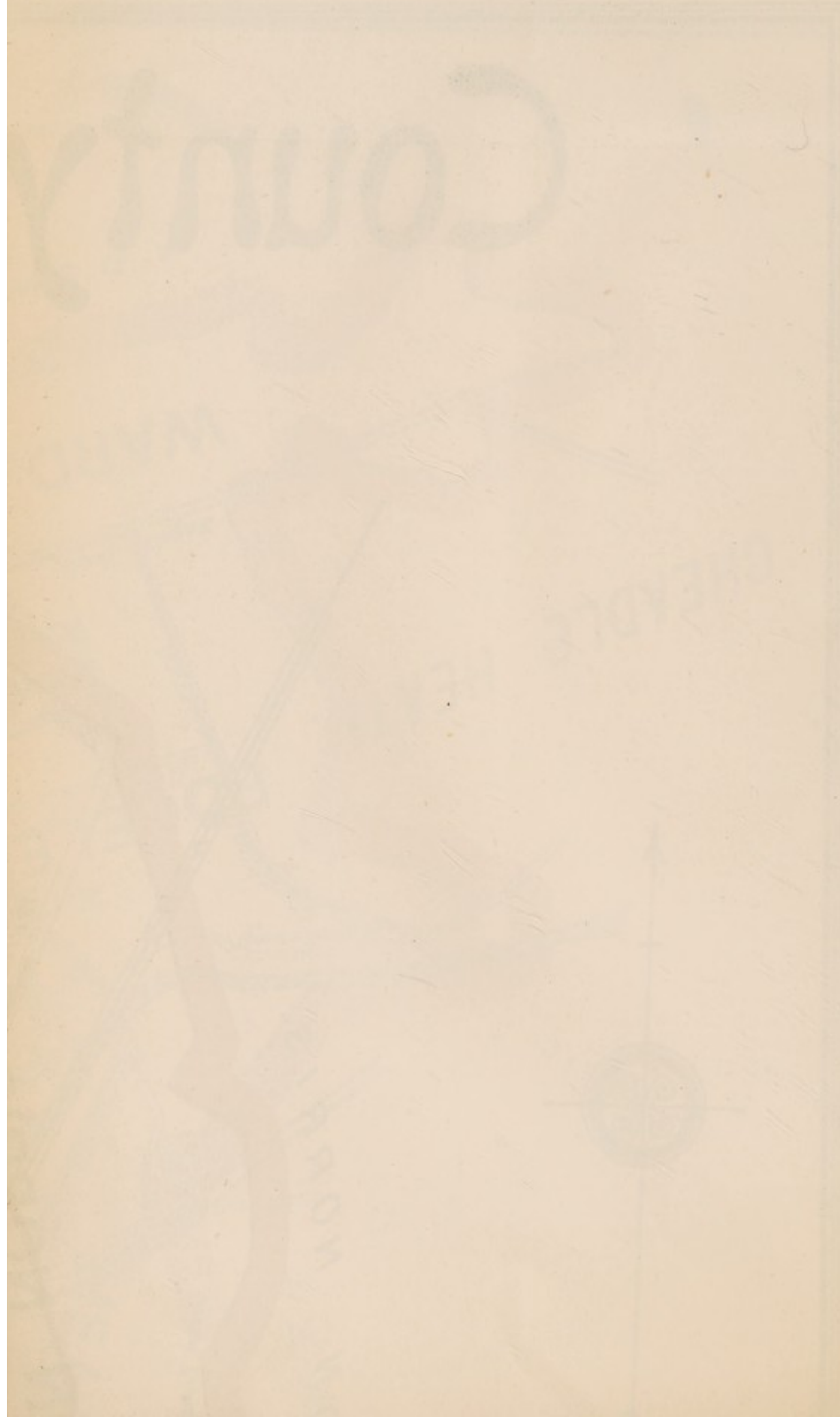
NUMBERS THUS 250 DENOTES HEIGHT IN FEET ABOVE SEA LEVEL.

THE RIVER IS COLOURED LIGHT BLUE.

THE BOROUGH BOUNDARY IS COLOURED RED.

SCALE 6 Inches to 1 Mile.

JOHN ATKINSON,
BOROUGH SURVEYOR,
NOVEMBER 1ST, 1894.



Inspection of these tracings (*vide chart*) reveals a marked general similarity from June to October inclusive. The rise of the typhoid and diarrhoea curves commenced almost simultaneously, and when—as pointed out by Drs. Ballard and Tomkins in regard to diarrhoea—the four-foot earth register had reached 56°. In the first week of July the air thermometer, by a rise of 4° or 5° on the previous week, attained its second highest reading for the year, viz., 67.5°. This was followed by a fall of several degrees; but in August another rise occurred, the maximum reading for the year (70.3°) being registered in the third week in August. It is noteworthy that the marked elevation of temperature of the fourth week in July and the third week in August were in each case followed in from two to three weeks afterwards by a corresponding rise of the typhoid fever curve. The final point to which I wish in this connection to draw attention is the marked prematurity of the maxima of the typhoid and four-foot earth thermometer curves, and consequently of their decline. It appears to me that possibly an explanation of this occurrence is to be found in the fact to which Mr. Midgley called attention, in his report for July to the Bolton Corporation, viz., that the seven months' accumulation of bright sunshine—and therefore of heat—to the end of July of 1893, was almost as much as took place during the first eight months of 1892.

The question of the water service in each district and in each case received special attention. The three most affected areas may, with considerable accuracy, be said to have each received their supply from a different source. The district of Edgeley has derived its water from a deep well in the red sandstone, this water being of exceptional purity, and the service constant throughout the summer. The affected districts of the Middle and St. Thomas's wards were supplied with filtered upland-surface water from the gathering ground at Disley: Inquiry as to the occurrence of enteric illness amongst the company's employes and the inmates of the houses on the catchment area was made with negative results, and this water, though not as pure as that supplied to Edgeley, was not shown by chemical analysis to be unfit for drinking purposes. The same remark applies to that supplied to the Heaton Norris district, and which is purchased from the Manchester Waterworks. An inspection of the plans of the water mains of the most affected localities showed that each of these areas constituted but a fractional portion of the otherwise comparatively unaffected district to which the same water was supplied by the same mains. The dates of the two periods during which nightly intermissions of the supply were made in the Middle and St. Thomas's district and in the Heaton Norris district was in the first instance coincident with a rise, and in the second with a fall of the typhoid curve; it, therefore, seems reasonable to eliminate, as practically immaterial, the influence of intermission of the supply. The conceivable possibility of infected liquid from privy contents heaped in the road during the process of night-scavenging finding its way, in times of intermittent supply, into the mains through the ball-valves of street-hydrants, was considered and eliminated as unsupported by obtainable evidence, and so also was the question of pollution of the water supply by lateral insuction of filth through defects in mains, &c.

With reference to the milk-supply, it was reported to you that in July, a case of typhoid occurred in a milk shop in Edgeley, and that shortly afterwards 9 cases occurred in houses obtaining milk from this shop. Inspection of the two farms at which this dealer purchased milk revealed the fact that the cans were washed with water obtained, in one instance, from a dirty-looking pool in the field in which the cattle were grazing, and in the other from a shallow well in suggestive proximity to the privy-midden, and subjacent to the imperfect channel, along which passes to the sumpt-hole so much of the sink waste-water of the house as does not soak into the ground. There was, however, no history

of any recent illness amongst the inmates or the cattle, nor on inquiry could anything of the kind be discovered amongst the local consumers of milk from these farms. With this exception there does not appear to have been any marked grouping of cases round a source of milk supply, and I am disposed to believe that the milk of the vendor referred to, if contaminated, became infected at the vendor's shop.

The occurrence of seven cases of typhoid fever amongst the inmates of, and workers in, a house used as a pork-butcher's shop seemed to demand special investigation, and it was found that all the sufferers were in the habit of using a privy into which had been thrown the discharges of a person living in the adjoining house, who had been suffering from severe diarrhœa and extreme prostration for some time before, but whose illness had not been recognized as typhoid fever. Careful inquiry as regards the subsequent cases that occurred in this neighbourhood failed, in every instance, to establish any connection between them and the seven cases referred to. In another house it was found that for three weeks a child of ten years of age, who had been attending her sick mother and frequently removing her copious diarrhœal discharges, had also at the same time been engaged in serving out provisions in the small general shop which her parents kept, but, as in the preceding case, inquiry failed to show that any subsequent occurrence was in any traceable to this.

The occurrence of 5 cases amongst the scholars of a certain school, led to the conclusion that some of them were due to the use of a very badly flushed and inferior type of latrine water-closet on which infected excrement had "caked." In my special report of 8th August, 1893, and in my Supplementary Report to the Local Government Board, issued on 26th September, marked attention was directed to the repeated instances of the influence of emanations from infected midden privies in spreading the disease, and numerous conditions of defective or incomplete drainage arrangements observed on infected premises were also particularized.

The following is a summary of the steps taken to cope with the disease :—

(1). The provision of sanitary "Rochdale" pails for the reception of all infected discharges and fluids. These pails were charged with corrosive sublimate solution, and it was found necessary to issue special written directions as to their regular removal every 24 hours, and their subsequent thorough cleansing.

(2). The emptying and *attempted* disinfection of infected privy pits.

(3). Stoppage of the suspicious milk supply.

(4). Much activity in the detection and abatement of insanitary conditions generally.

(5). Free distribution of disinfectants and circulation of cautionary notice advising attention to (1). Sanitary defects in or about dwellings, (2). Domestic cleanliness, (3). Diet, especially the boiling of water and milk before use and the avoidance of unsound food, (4). Attacks of diarrhœa, however slight.

The following more comprehensive and far-reaching preventive measures were also suggested :—

(1). The provision at upper or dead ends of main sewers of ventilating shafts 6 inches or more in diameter, leading from the crown of the sewer to the side of the road, and thence up houses or buildings away from all windows or chimneys.

(2). The construction on sewers of steep gradient, of tumbling-bays with manhole, ventilator, and flap-valve

(3). The provision of flushing apparatus for each important sewer.

(4). Increased attention to condition of street gullies.

(5). The provision of excreta sterilizers, or suitable incinerators for rendering infected excreta innocuous.

(6). "That as regards the drains of new buildings, good beds, firm joints, and requisite gradient be insisted on; that such drains be actually tested with the water-test after being laid and before being covered in, as otherwise it is impossible to ensure them being water-tight, even when everything is to all appearance sound; that they be disconnected from the public sewer by the inter-position of syphon disconnection trap; and that no new building be permitted to be occupied until it has been certified to be in accordance with the requirements of the Bye-laws and Public Health Acts."

(7). "That in view of the approaching execution of the sewerage scheme, the erection of privies in connection with new property be as far as possible prevented, and that conversion of the midden to the water carriage system be encouraged."

The subjects of sewer ventilation and flushing and of building inspection, had already been under the consideration of the General purposes and Highways Committee, and the following steps were taken forthwith :—

(1). The erection of shaft ventilators in the Edgeley District.

(2). The construction of 5 automatic flushing tanks, varying from 1200 to 200 gallons capacity.

(3). The insertion of disconnecting traps at the junctions of sewers in 9-foot passages with those in main streets.

(4). The reference to a special Sub-Committee of the whole code of building byelaws with the object of its revision.

(5). The publication of a notice that strict compliance therewith will henceforth be insisted upon, and the provision of a complete and admirably framed set of forms to facilitate systematic building inspection.

The Sanitary Committee also delegated a Sub-Committee to view and report on the various forms of refuse destructors, and excreta sterilizers. This Sub-Committee subsequently visited Oldham and Warrington and viewed the Destructors in these towns, but the matter has since fallen into abeyance.

Diarrhœa.

Diarrhœa was extremely fatal, 202 deaths having been registered from this cause, representing a mortality of 2·7 per 1000 persons living, as compared with 1·23 for the thirty-three large towns and 0·80 for London. Of these 202 deaths, 168 occurred between the 18th June and 30th September, during which period the disease was widely epidemic. The proximate and some of the predisposing causes of diarrhœa have been already considered (page 18) and its special fatality in hot weather has been pointed out. Dr. Ballard has, however, shown that this increased mortality bears little relation to the temperature of the *air*. He found that it commences when the temperature of the *earth* at a depth of 4 feet, registers about 56°F. and that in its further rise and subsequent decline, it closely corresponds with the movements of the 4-foot earth thermometer.

The latter falls much more slowly and gradually than the atmospheric temperature, and hence "summer" diarrhoea may continue into the fourth quarter of the year, long after the temperature of the air has fallen below 56°F.

With the exception that the maximum diarrhoea mortality was registered seven weeks before, instead of in the same week as the maximum of the 4 foot earth thermometer, Dr. Ballard's observation is closely borne out by the experience of Stockport last year, as shown on accompanying chart.

On "spotting" the 202 fatal cases on to the accompanying map, it became evident that 24 out of 39 diarrhoea deaths in Edgeley Ward, occurred in the district between the Stockport Football Ground with Booth Street on the south, and Hollywood Park on the north. In the streets on both sides of that part of Middle Hillgate which lies between Wellington Street and Brentnall Street, 35 diarrhoea deaths occurred out of a total of 67 in the three wards, of which this district forms a very small part. A less marked aggregation of fatal cases is observable in the district around the top of Lancashire Hill. Now it is remarkable that these three districts are exactly those which were most affected by the typhoid fever epidemic of the year under notice, and it serves to accentuate the relationship is believed to exist between typhoid fever and diarrhoea, and to illustrate the community of conditions which favour the occurrence of both diseases. Insanitary circumstances which will merely *predispose* to typhoid fever, are often capable of *causing* fatal diarrhoea, pollution of the air by germ-laden emanations from sewage-saturated soils, and from putrefying collections of excrement, such as the contents of privy-middens, being specially and indisputably potent for evil. In addition to the foregoing a group of 9 fatal cases occurred in the vicinity of the junction of Hempshaw Lane with Hillgate, and a large number of diarrhoea deaths took place in the lower part of the town along the course of the river, but often at some distance from it. In streets and courts off the north side of Heaton Lane, some thirteen fatal cases occurred. Five deaths occurred in Backwater Street and Heald Street, while nine are referred to a cluster of streets on the south-east side of Gt. Portwood Street, between the Gas Works and Queen Street. Thirteen deaths were returned from New Bridge Lane, 5 of these being in houses in contiguity to the New Bridge Lane tip.

Measures adopted in regard to the prevention of Cholera.

On September 11th, I reported to you that cholera had broken through the first line of the country's defence, viz., the seaboard, and that several cases had occurred in inland towns: that in consequence I had communicated with the Police and Railway Authorities with reference to the occurrence of any case in the streets or at the stations, and had made arrangements for promptly isolating in the northern pavilion of your hospital, any occurrences that might be reported. I also asked your consideration of the following recommendations in order to quietly prepare the most effective plan of defence of which your re-sources permitted:—

(1). That a Sub-Committee be appointed with full power to deal with any emergency that might arise.

(2). That Whitehill House be kept in readiness for the reception, *if necessary*, of the scarlet fever patients then occupying the southern pavilion of your hospital, in case further means of isolation for cholera cases were required.

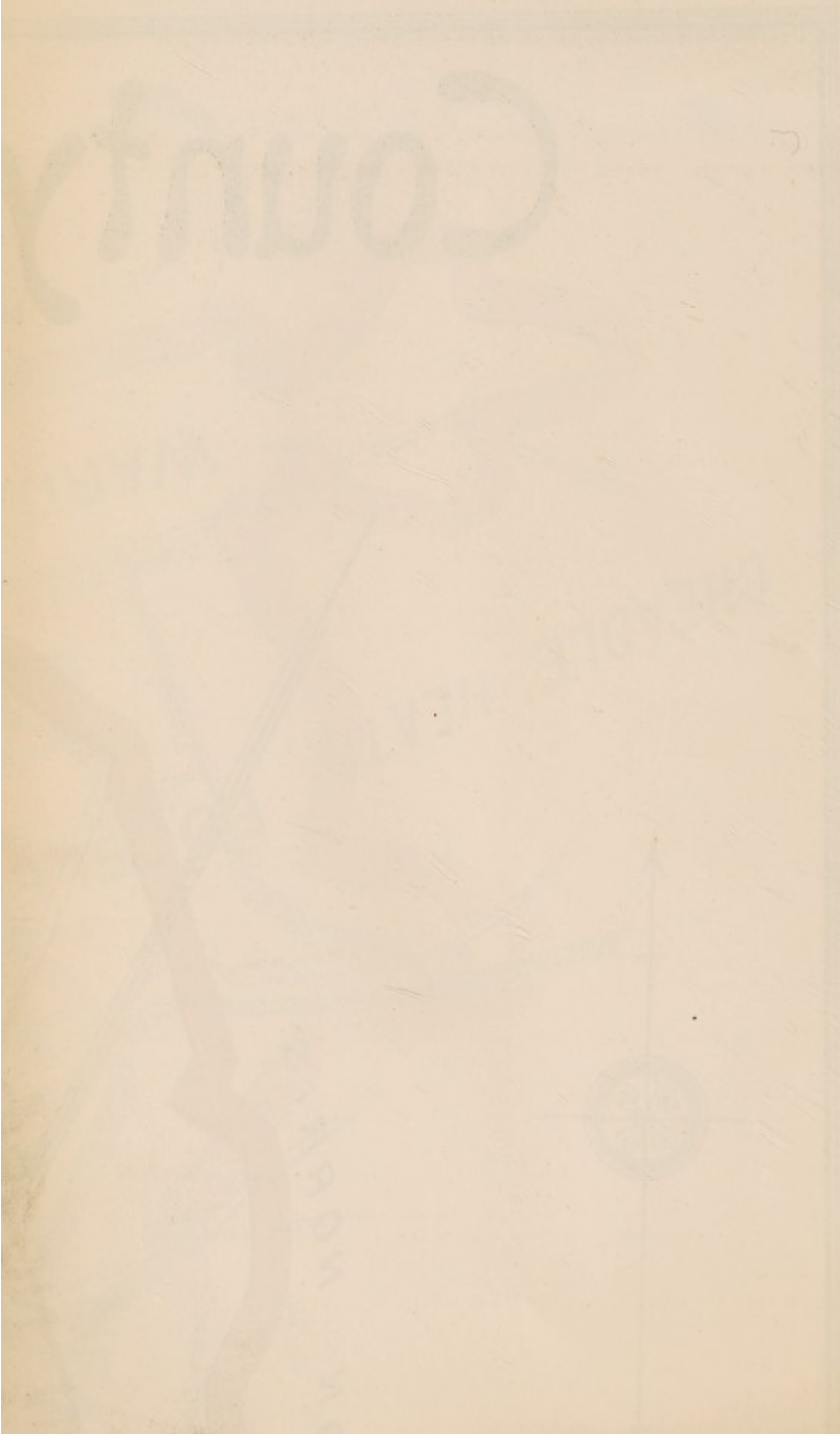
(3). That bacteriological examination of the dejecta in any suspicious case, be authorized.

County Borough of Stockport.

MAP Shewing Deaths from Diarrhoea in 1893.



JOHN ATKINSON,
BOROUGH SURVEYOR,
NOVEMBER 1ST, 1894.



These recommendations were adopted, and a list of more detailed proposals was prepared for the consideration of the Sub-Committee. These related to (1), the notification of cholera; diarrhoea, and to the provision of, (2), a house of temporary refuge and observation for members of infected families, (3), additional ambulances and litters, (4), additional nursing, which was at once retained, (5), public stations for medicine and disinfectants, (6), additional pails for the reception of infected excreta, and finally (7), as regards arrangements for burial, if unhappily any cases occurred and ended fatally.

In this way, the provisions of any special order which the Local Government Board might have issued under certain contingencies were anticipated and you placed yourselves in a position to comply with any further requirements without discreditable confusion or delay.

Fortunately, no case of Asiatic cholera arose in Stockport, but one case of rapidly fatal acute summer diarrhoea or English cholera, was the subject of inquiry by this Department. The victim lived in Wyatt Street, was a porter at the goods depot of the Cheshire Lines Committee, and was 37 years of age. He was taken ill about midnight on 1st September, was violently purged, the discharges being of the rice-water character; suffered from cramps in the legs and abdomen and from excessive thirst, and died about 5 o'clock the following evening, after an illness of 17 hours. Death was certified as due to "Diarrhoea: acute collapse." As soon as the case came to my knowledge the house was disinfected and the privy scavenged, and as far as possible, cleansed. The man had not been out of Stockport, and no history of infection by Asiatic cholera could be traced. No further case occurred.

On receipt of notification from English port Sanitary Authorities, four persons who arrived in Stockport from foreign cholera-infected ports were visited daily for some days.

Measles.

This disease was widely prevalent in every quarter of the Borough during April, May, and June, though less so in Heaton Norris than elsewhere, and was the assigned cause of death in 37 cases, the mortality per 1000 persons living was equal to 0.5 as compared with a rate of 0.44 for the 33 large towns, and of 0.39 for London. The disease seems to have been specially prevalent in northern manufacturing towns, the death-rate per 1000 having been 1.16 in Blackburn, 1.42 in Bolton, and 1.63 in Preston.

The deaths which occurred in Stockport ^{nearly} equalled the combined mortality from smallpox, scarlet fever, and diphtheria. Many of these deaths were the result of chest diseases complicating or following measles, and occasioned probably by careless exposure and neglect of sufferers who should have been kept in bed and medically attended.

Upon the outbreak of this disease becoming known, the following circular dated 26th April, 1893, was sent to the managers of each school in the Borough:—

PREVALENCE OF MEASLES.

"I beg to inform you that there are at present a large number of cases of measles in the Borough. May I ask you to be kind enough to co-operate with me, and to serve our common interests in preventing its extension by instructing your Teachers to at once notify to this Department the occurrence of any suspicious case amongst their scholars, with the address of the sufferers.

As the ordinary symptoms of invasion are those of a severe feverish cold, with running from the eyes and nose, sneezing, and cough, and as measles is highly infectious from the first, any child presenting such signs, together with any other member of the same family should be excluded from your school.

As notification of measles is not compulsory, any information you can give me as to its existence will be especially valuable."

In response to the foregoing, the teachers of 12 of the principal schools kindly furnished me with the names and addresses of some 357 cases which had come to their knowledge. Through the courtesy of the chairman of the School Attendance Committee, the co-operation of the school-attendance officers in regard to notification was secured, and in addition one or two medical men kindly informed me of cases occurring in their practice. In this manner as well as from the death returns, knowledge of a large number of cases were obtained. Each was visited by an inspector, supplied with a cautionary notice and disinfecting fluid, and on the termination of illness the infected rooms and their contents were as far as possible disinfected.

The outbreak was responsible for very serious interference with elementary education. In many schools the attendance was reduced to half the usual number or even less, and in the four following instances voluntary closure was adopted for the periods indicated: the British School, May 12 to May 19th; Cale Green British School, May 12th to May 19th; Great Moor School, June 2nd to June 9th; St. Paul's, Portwood (Infant Dept.), April 24th to April 31st; and St. Peter's School, May 2nd to May 15th.

In other cases considerable care was exercised to exclude inmates of infected houses, especially by the Managers of Banks Lane School, who issued an excellent cautionary notice to the parents of all their pupils. One teacher very forcibly pointed out, however, that many children who stayed from school nullified any good that might have resulted from their enforced absence, by joining the Sunday Schools in the Churches and Chapels. Such recklessness cannot be too severely deprecated, and the prosecution of any parents who allowed their infected children to expose themselves in public, would probably have a salutary effect.

NOTIFICATION OF MEASLES.

The question of making compulsory the notification of measles, is one about which considerable divergence of opinion exists. It is, however, certain that the adoption of this measure at a time when the disease is already epidemic, will be found to be costly and comparatively useless. For this reason the Local Government Board, now generally advise Authorities "that no proper experience can be acquired as to the value of the notification of either measles or whooping cough unless the system is maintained for several years—generally five years—the idea being that at least two outbreaks should occur during the period in which notification is in force, and that the period should be sufficiently long to enable the authority to see what can be done at the onset of an apparent epidemic, rather than at the height of one."

In favour of notification of measles, it is asserted, apparently with considerable truth:—

(1). That compulsory notification would do much to impress upon the poorer classes, that measles is a really serious and dangerous disease, which ought not to be carelessly regarded as a trifling and inevitable affection of childhood.

(2). That instructions could be given to insure such treatment of cases as would largely diminish the mortality from this complaint.

(3). That instructions could also be given for the isolation of individual cases, and for the exclusion of other children belonging to infected households, from schools and public assemblies.

(4). That attention would be directed earlier than is at present possible to schools which had become foci for the dissemination of the disease.

(5). That the compulsory notification of measles would prevent the concealment of cases of scarlet fever, under the pretext that the disease was mistaken for measles.

Dr. JAMES NIVEN, in a recent special report to the Manchester Health Committee, has forcibly summarized almost as follow, the arguments against notification which have led him to form an opinion that in Manchester compulsory notification is undesirable.

(1). The death-rate from measles is highest in the second year of life, and a very large proportion of attacks occur at that early period. Many of these cases receive no medical attendance, and owing to the difficulty of diagnosis and high infectiveness of the disease in the early stage before the rash appears, the disease is spread before it is recognized.

(2). That the power of infection arises *before the onset of symptoms*, and hence measles spreads amongst school children before the first cases have been recognized, and therefore before notification is possible.

(3). That, generally speaking, the mortality records of notification districts are not encouraging as regards the connection of notification with reduction of the death-rate from measles.

(4). That notification is very expensive, and the expense incurred would be justified only by a considerable degree of control over the disease. Such a degree of control it is evidently difficult to obtain.

(5). That "without isolation in hospital" (which is impracticable) "there is little prospect of being able to check the spread of measles."

Calculated upon a generally recognized proportion (3 per cent) of deaths to attacks, notification of measles in Stockport last year would, at the rate of 2/6 per case, have cost between £100 and £150. This, however, might be greatly lessened if an arrangement were effected, whereby after a first case, no subsequent attack occurring in the same house within thirty days, need be notified, such house being regarded as infected during that period. On the other hand, to deal with all the cases that existed would have necessitated either neglect of current work, or a considerable temporary addition to your sanitary staff, but this might be expected in any serious epidemic.

In conclusion, while I am not disposed to urge compulsory notification of all cases of measles, I am of opinion that in a town of the population of Stockport, a very modified and comparatively inexpensive system of notification of first occurrences, *if in force at the onset of an apparent epidemic*, ought to yield good results, if energetic advantage were taken of the earlier opportunities thereby afforded for (1), controlling school attendances from infected households, (2), detecting infected schools which were acting as foci of the disease, and (3), for warning parents as to the serious nature of the malady, and the necessity for isolation, proper care, and medical attendance.

It should be clearly understood that these anticipated advantages are quite unconnected with the isolation of measles in your hospital, which I regard as quite impracticable.

Scarlet Fever.

Last year this disease was very prevalent in the Borough, 254 cases having been reported. This number was much greater than that of 1891 and 1892, but was considerably exceeded in 1890, as during eleven months of that year, 285 cases were notified. This is probably another illustration of the fact that scarlet fever outbreaks tend to recur every few years as a fresh series of susceptible children become exposed to infection. The largest number of cases occurred in September and October, and taking into account the earliness of the seasons last year, this may be looked upon as identical with the maximum seasonal prevalence which in ordinary years occurs in October and November. The disease was, generally speaking, of a very mild type, the death-rate per 1000 persons living being equal to 0.15, and this fact was undoubtedly to a large extent responsible for the wide prevalence of the malady and the difficulty experienced in stamping it out. Case after case has come under notice in which the symptoms of illness have been so slight that the patients have gone about as usual, and in more than one instance have uninterruptedly continued their attendance at schools. The aggregation of children in both Day and Sunday schools has been another important factor, the names of two such institutions being specially conspicuous in this respect, though *not* through any want of co-operation with the Health Department on the part of the teachers. Public assemblages of other kinds have also helped to disseminate the disease, and this remark is, in my opinion, specially true in regard to a bazaar held in Edgeley in the month of March. This was quickly followed by a great increase in the notifications of scarlet fever, and in nearly every case the sufferers were found to have been at the bazaar in question. It seems probable that they were infected by some person suffering from a slight and unsuspected attack. Another cause of the persistence and spread of scarlet fever, is, I believe, the inefficiency of the arrangements of circumjacent small Authorities for dealing with the cases arising in their Districts. In one instance there is no system of notification; in none is there any proper means of isolation provided. Such apathy reacts on the health and pockets of the ratepayers of your Borough, between whom and the inhabitants of these outlying districts there is constant and varied personal intercourse. The occurrence of a certain group of five cases, one of which proved fatal was, in my opinion, distinctly the result of the carelessness of those in charge of a child suffering from the disease in a house on the Bramhall side of the Buxton Road. This child *x* was taken ill on 28th April, and on the 31st May was allowed to go out, and was seen to embrace and kiss a child who lives in your Borough, and who, two days later, was taken ill with a fatal attack of scarlet fever. *x* was also found playing with children of another family living in your Borough, and was ordered away by their mother, but 3 of her children developed the disease, and another case traceable to these occurred a few days later. The result was that in addition to the suffering entailed on the children and the anxiety of their parents, you were saddled with the cost of isolating 5 scarlet fever patients. The only satisfactory feature of the occurrence was your successful prosecution of the parents of *x*. for permitting their child to run about while in an infected condition.

Though my functions relate strictly to your district only, I consider it my obvious duty to you to point out the great necessity for the provision of adequate facilities for the isolation of infectious disease in circumjacent districts. The absence of such provision is a standing menace to the health of the Borough, and frequently (as in the above instance), an active source of injury. A representative from you on this subject to the Cheshire and Lancashire County Councils would doubtless command attention, and under the Isolation Hospitals Act, 1893, the County Councils are empowered, on the report of their Medical Officer of Health, to compel the provision of adequate means of isolation.

The particulars of two individual cases are sufficiently interesting to record :—

On 29th April, A. was in one of the swing-boats at Waterloo Fair, and on the 1st May was taken ill with scarlet fever. Inquiry failed at the time to elicit any other fact, but on 12th May, a notification in regard to a case B, *in the peeling stage*, was received. It was then ascertained that B. was taken ill on 26th April, but had continued to go about as usual and to attend school, and that he had been in the same swing-boat at the same Fair, and at the same time as A, who had evidently contracted the malady from B.

In the other case, the infection appeared to have travelled several thousand miles. A lady convalescing from ~~scarlet~~ fever in Denver, Colorado, sent an illustrated newspaper to some relatives in your Borough. This was opened and given to a child to look at and play with. Within 4 days this child developed scarlet fever, and though of course it is quite possible that infection may have been contracted elsewhere, I failed altogether to trace any other history of exposure.

During the year a medical man was prosecuted and fined for failure to notify a case of scarlet fever in the house of the head-master of a large elementary school.

Diphtheria and Membranous Croup.

The largely increased prevalence of diphtheria and membranous croup observed in recent years in London and many other large urban communities, was very manifest in Stockport during 1893; 80 attacks of diphtheritic disease having been reported as compared with 39, 17, and 20 in 1892, 1891, and 1890, respectively. Death resulted in 32 cases, representing a case mortality of 40 per cent, and a death-rate per 1,000 persons living of 0.43, as compared with an exactly similar rate for the thirty-three great towns of England and Wales, and a rate of 0.76 for London. These figures for London and the other great towns are double the average rates for the preceding decennium, and it cannot be said that the cause of this remarkable increase is as yet satisfactorily understood.

Although the cause or causes of diphtheria are veiled in a good deal of of obscurity, it is well-known that the disease is an eminently infectious one, transmissible from the sick to the healthy. There is also reason to believe that by a process of "progressive development of the property of infectivity," a poison may be developed in simple cases of sore throat, capable of producing disease indistinguishable from true diphtheria. Further, the aggregation and prolonged association of children in schools tends to "foster, diffuse, and enhance the potency of diphtheria," especially where, as is often the case, many of the scholars may be suffering from that sore-throat which usually precedes and accompanies outbreaks of diphtheria. It is well-known, too, that the poison of this malady may be transmitted through milk, sometimes possibly as the result of diphtheritic disease in the cow herself. Milk diphtheria has been observed to be specially incident on better class households in which milk is obtained in comparatively large quantities, and often stored in a cool place for some hours before use, thus affording favouring conditions of time and temperature for the development of the diphtheria microbe.

Although opinions differ as regards the exact relation of insanitary conditions to diphtheria occurrences, it is generally admitted that vitiation of the atmosphere

with emanations from putrefying organic matter, strongly predisposes to, if it does not actually cause, diphtheria. Sewer deposits, filth accumulations in privies or tips, sewage-polluted yards and house-foundations, are amongst the commonest sources of such emanations, and the very frequent association of these conditions with outbreaks of diphtheria renders it difficult to believe that they are not to a considerable degree causally related. With regard, finally, to natural site, a wet retentive soil incapable of natural drainage, whether gravel or clay, is believed to exercise a predisposing influence, especially when associated with a prevalence of cold damp winds, and Mr. Adams, F.R.C.S. of Maidstone, has shown that a most remarkable relation exists between the fluctuations of ground-water and the occurrence of diphtheria.

I have considered it my duty to analyse in some detail, on the lines suggested by the foregoing considerations, the circumstances of the diphtheria prevalence in Stockport during 1893. The monthly occurrences were as follow :—

January	12	April	5	July	9	October	4
February	6	May	4	August	8	November	2
March	10	June	8	September	9	December	3

The incidence of the disease as regards sex and age is thus shewn :—

ATTACKS. SEX AND AGES.

Years	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-20	-30	-40	-50	Totals.
Males	1	5	...	4	3	3	3	1	2	1	...	1	1	...	...	5	...	2	...	32
Females	2	3	3	4	3	7	3	3	...	1	1	...	1	...	3	6	4	3	1	48
Totals	3	8	3	8	6	10	6	4	2	2	1	1	2	...	3	11	4	5	1	80

DEATHS. SEX AND AGES.

Years	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-25	Totals.
Males	...	1	4	...	2	1	...	1	1	1	...	...	1	...	13
Females	2	4	2	3	4	2	1	...	...	...	...	1	19
Totals	...	1	6	4	4	4	4	3	2	1	1	...	...	1	32

It is seen :—

(1). That the greatest prevalence was in the first and third quarters of the year, and *not* in the fourth quarter, as is usually observed.

(2). That over 74% of attacks and 96% of deaths occurred under 15 years of age.

(3). That the total proportion of females to males attacked is as 3 to 2, while above 12 years of age, it is as 2 to 1. This is in accordance with general observation, and has been attributed by Dr. Thorne to the fact that in diphtheria intimate contact with the infected involves exceptional risk, and that women are

Blackport.

Green Spots
Brown Spots

County Borough of Stockport.

MAP. Showing (1) Deaths from Phthisis in 1893. Green Spots.
and (2) Occurrences of Diphtheritic Disease. Brown Spots.



Reference.

A DARK BLUE LINE DENOTES MAIN SEWER.

NUMBERS THUS (280) DENOTES HEIGHT IN FEET
ABOVE SEA LEVEL.

THE RIVER IS COLOURED LIGHT BLUE.

THE BOROUGH BOUNDARY IS COLOURED RED.

SCALE 6 Inches to 1 Mile.

JOHN ATKINSON,
BOROUGH SURVEYOR,
NOVEMBER 1ST, 1894.

specially liable to such exposure. On plotting the cases on to the accompanying map, it was found that 33 occurrences were grouped round the districts of Middle and Higher Hillgate, and Wellington Road South, within an area limited on the south by a line through Richardson Street to Lowfield Grove, on the west by a line from Lowfield Grove through Shaw Heath to Wellington Street : on the north by Wellington Street : on the east by Hopes Carr, Canal Street, Bell Street, and a line continued across Hempshaw Lane to Richardson Street. Sixteen cases arose in Heaton Norris, nine in the district of Edgeley, between the Stockport Football Ground and Hollywood Park, four on Stockport Great Moor, while the remainder were isolated cases in the Brinksway, Chestergate, and Portwood districts.

With regard to the possible influence of site in this outbreak, Mr. Gray, F.G.S., writes me, in reference to the district of Middle Hillgate and Wellington Road South, "You may take it for granted that the surface soil is composed mainly of beds of Sand varying in depth lying on Boulder Clay. In many cases the sand lies in basins in the clay in which water is retained when the rainfall is insufficient to allow them to overflow. Several springs rising from these sources formerly existed in various parts of the town, and in the area under consideration those on the slope now occupied by Lord Street may be mentioned." These remarks also apply generally to the affected districts of Edgeley and Heaton Norris. Now, as has already been pointed out in connection with enteric fever, the lowering of the ground-water produced by the long drought of 1893, would tend greatly to interfere with the natural drainage of these sand-basins on which stand all the districts most affected with enteric, epidemic diarrhoea and diphtheria during 1893. As in each of these districts there was extensive soil pollution from leaking privies, defective drains, and the deposit of slops on the surface of yards and streets, it is impossible to resist the conclusion that polluted ground-air was a very potent factor in causing the prevalence of diphtheria, as well as of the other diseases named.

The cases of each group were separately and collectively investigated. With regard to the existence of other forms of throat illness, I was informed by several medical men with large practices amongst the poorer classes, that especially in Hillgate and Heaton Norris there was a considerable prevalence of such affections. In the words of one practitioner "they were mostly cases of follicular tonsillitis, —very infectious, generally attacking several members of the same family." In the weekly returns a few deaths were registered from such cases as "laryngitis," "inflammation of the throat and neck," "abscess of the neck," &c., but their number was not large.

It is also worthy of remark that an unusual prevalence of scarlet fever was maintained throughout the year, and that during the second quarter, the town was visited by a severe outbreak of measles, an attack of which disease directly preceded, in at least four cases, the development of diphtheria.

Regarding the milk service, no community of supply could be detected, and in nearly every instance, milk was bought only in small quantities and used at once.

The results of enquiry into the questions of school attendances and sanitary surroundings were, however, more suggestive, and may for convenience be considered separately in regard to the following groups of cases :—

1. CASES IN DISTRICT OF MIDDLE AND HIGHER HILLGATE AND WELLINGTON ROAD SOUTH.

Eleven cases occurred during the first three months of the year ; of these seven were pupils at one or other of two large schools (Brentnall Street and St.

Thomas's) in this district. In one of these cases the sufferer probably became infected by drinking lemon tea from a cup which had just been partly emptied by a schoolmate suffering from diphtheria. Another victim was the infant sister of one of the foregoing seven cases, while the ninth case was the brother of a pupil teacher at Brentnall Street.

Of the nine cases reported during the second quarter, one was a pupil at St. Thomas's School, one had attended a meeting at the St. Thomas's Mission House four days before, and others attended the daily or Sunday classes at Brentnall Street. In the causation of the 13 cases registered during the 3rd and 4th quarters, school attendance appears to have had very little influence.*

With regard to associated sanitary circumstances, in one instance it was found that the patient, a plumber by trade, had spent several days repairing some very offensive closets in a public institution, and fell ill whilst engaged at this work. Another person had for some days been sleeping in a bedroom immediately over a midden privy, and complained very much of the offence therefrom.

Particulars of other cases in this respect are appended as follows :—

(1) April. CROWTHER STREET, untrapped openings to drain at back door. Sinkwaste in cellar not efficiently disconnected.

(2 and 3) May and July. CHARLES STREET. Two cases. Much complaint of smell from privies, and from Charles Street "tip," during warm weather.

(4) June. BARLOW STREET. Complaints of bad smells in house from untrapped drain openings in yard. Yard sodden and dirty.

(5) July. LORD STREET. Back-to-back house without through ventilation and with sink waste-pipe in direct communication with sewer.

(6) August. BAGULEY STREET. Untrapped opening to drain in yard. Privy midden built against wall of house.

(7) September. TOLLBAR STREET. Untrapped opening to sewer in yard. Privies very offensive. Yard slopsodden.

(8) September. ELIZA STREET. Privy-midden built against end of house, and covered in by a lean-to roof, common to it and a kind of kitchen or wash-house in which the children played. Walls and floor very damp, and smell most offensive.

(9) December. WELLINGTON ROAD SOUTH. Small untrapped catchpit in washing-cellar, connected to unsocketted field pipes. Basement therefore saturated with sewage. Sewer air entering through unsealed trap beneath slopstone. Lavatory waste-pipe in hall connected direct to sewer. Joint of soil-pipe and closet out go leaking. Ventilator to soil-pipe leaking close to bathroom window.

2. CASES IN EDGELEY.

The origin of the cases which occurred in the district of Edgeley, between the Football ground and Hollywood Park, is somewhat obscure. The first sufferer had been living in Hillgate District, where diphtheria was then prevalent, and probably contracted it there. The two next cases were those of a factory operative and a child who had just begun to attend a private school. In neither of these cases was previous contact with the disease definitely traced. Another individual returned from Liverpool suffering from the disease. Five cases occurred during August and September, when the outbreak of enteric fever was at its height, and when the complaints of sewer air nuisances were most numerous in this district. The sanitary condition of the infected houses was in most cases fairly good.

* In this connection I desire to acknowledge the care exercised by the masters of these schools in excluding children from infected houses, and thus practically preventing any extension of the malady amongst their pupils.

3. CASES IN HEATON NORRIS DISTRICT.

Fourteen cases were reported in this district, possessing, so far as I could ascertain, no common cause such as school attendance.

The fatal case of a child notified on 26th October, in Ince Street, presented a remarkable history and will be dealt with first. During the second week in October, the mother and four other children in this house suffered from sore throat. These four children all had scarlet fever about three years ago. On the 17th or 18th October, a child, aged 2, and born since the others had had scarlet fever, began to ail, and had lumps in the neck which when seen by the medical attendant on 24th October, had suppurated and sloughed. There was then a little membrane on the tonsils, general drowsiness, but no fever; and a bright well-defined scarlet rash on the buttocks, thighs and forearms which had appeared on the previous day. This case was notified as diphtheria in view of the recent sore throat history of the other children. There was, however, a sixth child in the house who had been constantly exposed to the infection of the scarlet fever when the four other children had it three years before, but did not then contract the disease. On 31st October last, this child was suddenly taken ill with headache, vomiting, sore throat and rash, and was reported as a case of scarlet fever. It therefore seems possible that the fatal case notified as diphtheria may really have been scarlet fever, and that the sore throats from which the other children suffered were in reality manifestations of scarlet fever poison in patients partly protected by a previous attack of this fever. I may add that Mr. Housman, F.R.C.S., to whom I am indebted for particulars of these cases, shares this view.

The circumstances of the thirteen other occurrences may be summarized as follows :—

Case (1). HEATON LANE. Two defective D-trap closets at this house permitting ingress of sewer air.

(2 and 3). TIVOT DALE. Mechanical sanitary arrangements exceptionally good. Much complaint about offensive emanations from urinal and urine-soaked passage belonging to adjacent public house. History of typhoid and previous throat illness in the house.

(4). GT. EGERTON STREET. Untrapped sewer air-inlet within the house.

(5). BEARD STREET. Diphtheria occurred at this house 12 months before. Very foul emanations from cellar, due to soakage through gable end of house of liquid filth from privy cellar and manure midden.

(6). CHURCHILL STREET. This is a new house, and at time of inspection was very damp, the road and path in front being then unpaved.

(7). WOODMAN STREET. This house was old, ill-ventilated, damp, and dirty.

(8). WOODMAN STREET. Contracted from case 7.

(9). GEORGES ROAD. This house was fairly sanitary, but in yard of school attended by patient, there were several untrapped openings to drain, and an untrapped urinal.

(10). WELLINGTON ROAD NORTH. A new servant had been recently engaged, who left her last place suffering from bad sore throat. After her arrival, her fellow-servant got sore throat, and finally, a third person developed diphtheria.

(11). WELLINGTON ROAD NORTH. This child had just recovered from measles, and had been in the habit of playing over a street gully, which, owing to the way in which it was laid, caught little rain-water and was often untrapped and offensive. In addition, the slopstone-waste emptied on an untrapped opening to an offensive brick drain which passed beneath the scullery floor.

(12). OLD ROAD. This patient was much subject to sore throat. There were 2 inefficiently trapped openings to drains in yard.

(13). WELLINGTON ROAD NORTH. House damp, otherwise fairly sanitary.

(14). CHURCH STREET. Sanitary condition of house fairly good. Milk always carefully boiled. No school attendance. No previous throat illness; cause not apparent.

(15). LOVE LANE. House and business place fairly sanitary. No apparent cause discovered.

4. ISOLATED CASES.

In regard to the "Isolated cases," the following facts were elicited. Four cases occurred in January, February, July and August, in houses into which sewer air was directly "laid on." Another case in January was that of a young man, who, shortly before being taken ill had been skating in a neighbouring district with some member of a family in which diphtheria then existed. The next case, also in January, was at Boothby Street, Great Moor, in a house saturated with damp, and built on stiff boulder clay which appeared to have little means of natural drainage. Two months later (viz. in April), this child's mother was attacked with diphtheria, and in the July following diphtheria again appeared in the house next door but one, the sanitary circumstances of which were similar. School attendance appears to have been responsible for two other cases which arose in February and April, in Cherry Tree Lane and on the Buxton Road, respectively. In April, the disease appeared in a large house, in Hall Street, most of the inmates in which were, I was informed, delicate. The child was attending a private school, at which no history of throat illness amongst the scholars was obtainable. Examination of sanitary arrangements of the house in which this child lived, proved that sewer air was being freely admitted through a defective W.C., and a bath-waste pipe which joined an unventilated soil-pipe. The sink-waste was not efficiently disconnected, and the drains emptied into an unventilated cesspool. In two cases which occurred in June and August, in George Street West, and Highfield Street, Brinksway, complaints were made at the time of the very offensive smell from the privies, and in the George Street case, of the nuisance arising from a road ventilator, opposite the house. In 4 other cases the yards were damp and unpaved, and presented untrapped openings to the drains. A fatal case occurred in August at High Bank Side, just after the opening and relaying of an obstructed and very offensive drain in the back yard, a work which occupied some 2 or 3 days, and filled the house with offensive effluvia. In September, another fatal case occurred at Warren Road, Cale Green, and the parents of this child volunteered the statement that it was constantly playing over a road-ventilator to the sewer, which is exactly opposite the house, and was at times very offensive. There was in this instance no obtainable history of previous sore throat or of school attendance. The last of these isolated cases occurred in November. The sufferer was employed at a shop in the Underbank. Complaints of offensive smells in this shop, led to an examination of the drainage arrangements, and it was found that the water-closet discharged into an almost vertical pipe with defective joints, which at the depth of about seven feet terminated in, and at right-angles to, an old brick drain in the floor of the cellar, beneath the shop. Clearly, no ordinary flushing from above would suffice to remove the obstruction at the point of junction of the vertical pipe and the horizontal brick drain, which was responsible for the nuisance complained of.

Summarizing the results of these inquiries it is clear:—(1) That the unusual incidence of diphtheria was most marked during the first and third quarters of the year: (2), that it was associated with a widespread prevalence of

other forms of throat illness, of scarlet fever, and (in the second quarter of the year) of measles : (3), that 74 per cent. of attacks were amongst children under 15 years of age : (4), that the three parts of the town most affected were those built upon basins of sand in which natural drainage and cleansing was interfered with during 1893, owing to the configuration of the subjacent boulder clay, and the unusual lowering of ground water : (5), that the district of Hillgate and Wellington road South, was most affected, (6), that in this district, during the first six months of the year, two large schools receiving most of the children in the vicinity, appear to have almost necessarily become to some limited extent foci of infection ; and finally, (7), that many individual cases were associated with the existence of palpable sewer air, polluted ground-air and midden nuisances, which were intensified by the exceptional meteorological conditions of the year under notice.

In a small proportion of cases no very evident predisposing causes were ascertained beyond those to which some of the foregoing most general remarks apply, but this will always be the case in a thickly populated district where it is often impossible to obtain a precise account of movements of individuals, or to acquire accurate information as to those with whom they have been in contact.

Influenza.

A mild form of this disease was prevalent in the borough during the first three or four months of the year, and again during November and December. Though only three deaths were directly assigned to this cause there can be little doubt that by aggravating and complicating other diseases, especially perhaps pulmonary affections, it very materially increased the general mortality.

In connection with influenza it is highly desirable that the public should bear in mind the following facts set forth in the official memorandum on the subject, issued by the Medical Officer of the Local Government Board, and which are in substance as follow :—1. Influenza is an eminently infectious complaint communicable in the ordinary personal relations of individuals one with another. 2.—The disease spreads very rapidly in consequence of its incubation period being very short, and of the power possessed by the contagion of rapidly reproducing itself. 3.—The success of preventive measures depends therefore upon the promptness with which they are undertaken. 4.—The following preventive measures are recommended :—First : Separation between the sick and the healthy so far as is practicable. Second : Isolation of infected persons in large and warm but well-ventilated rooms. Third : That persons who are attacked by this malady should not attempt to pursue their ordinary avocations, but should at once seek rest, warmth, and medical treatment. Fourth : That all unnecessary assemblages be studiously avoided, as the propagation of influenza is known to be promoted thereby. Fifth : Such preventive measures are specially desirable under the following circumstances :—1st. For aged or infirm persons. 2nd. For inmates of institutions, the mode of life in which can be regulated or controlled. 3rd. For the first cases in a locality or household where these are early recognised as influenza. In the words of the *British Medical Journal*, it cannot be said too strongly or repeated too often that the man who, while suffering from epidemic influenza, insists upon going about his daily business disseminating disease wherever he goes in public conveyances, business places, and places of public resort is a public danger. No one thinks of throwing off measles or scarlet fever by going into public places, why, then, influenza, which is not less infectious ?

Puerperal Fever.

8 cases were reported during the year, 3 of which ended fatally. In only 2 cases were the sanitary conditions below a very fair average.

Erysipelas.

56 cases were reported during the year, and 2 ended fatally. Some of these occurrences were traumatic in origin, but in the great majority of cases no history of injury was obtained.

Apart from the fact that not infrequently structural insanitary conditions are detected and remedied as the result of inquiry into cases of erysipelas, the utility of the notification of this disease seems somewhat remote. This is also the recorded experience of other Medical Officers of Health.

Whooping Cough.

33 deaths were assigned to this cause during the year, representing a mortality-rate per 1,000 persons living of 0·45, as compared with 0·48 for the 33 large towns, and of 0·54 for London. 17 of these deaths occurred in the first year of life, 14 between the ages of 1 and 5, and 2 after the completion of the fifth year. 12 fatal cases occurred in the congested districts on each side of Middle Hillgate, but otherwise no grouping of cases is observable. 5 deaths occurred in the whole of Edgeley Ward, 8 in Heaton Norris, and 3 in Portwood. The remaining 5 were isolated occurrences.

A proposal has been made to notify whooping cough, but I am disposed to regard this as hardly within the range of practical sanitation, owing to the insidious onset of the disease, the absence of a rash, and the consequent fact that the disease is rarely detected until many days after it has reached the infectious stage. The deaths are almost always due to bronchitis, pneumonia, or convulsions, very frequently the result of neglect and undue exposure as in the case of measles.

Lung Diseases.

PHTHISIS OR CONSUMPTION.

168 deaths were assigned to this cause during 1893, representing a rate of 2·3 per annum as compared with 1·67 for the whole of England during the preceding decennium. Phthisis or consumption is one of the diseases that may justly be regarded as in a large degree, preventible. It is distinctly predisposed to by insanitary conditions, and their gradual removal throughout the country has led to a steady decline in the phthisis death-rate. It is therefore not surprising to find, revealed by the spot-map, a special incidence of phthisis on those districts of the Borough in which the prevalence was greatest of other diseases associated with insanitary conditions, *e.g.*, diphtheria, enteric fever, and epidemic diarrhoea. Perceptible in those parts of Edgeley and Heaton Norris already defined, this is most marked in the Middle Hillgate District, where in one side street comprising about 120 houses, including courts, there were during 1893, 6 cases of typhoid fever, 2 of diphtheritic disease, 5 deaths from diarrhoea, and 4 deaths from consumption or phthisis. In the Middle Hillgate District, the population is perhaps more dense than in any other part of the town: much of the property is very old, damp and dilapidated: rooms are small, back to back houses are numerous, ancient and leaky privies are to be found close to dwellings, and the atmosphere

of the courts and houses is often stagnant and impure. In pointing out these facts with regard to parts of Middle Hillgate, I do not wish to imply that your Borough is in this respect worse than the majority of large manufacturing communities, for in almost every one of them similar black spots exist, and it must of necessity be a labour of time to purge them ; but as long as they continue to exist, so long will the diseases which flourish most amidst unhealthy sanitary surroundings continue to manifest themselves.

The influence of occupation in regard to mortality from phthisis is very important, but I am not at present in possession of statistics on this point, to which I hope to return in a future report.

In regard to the prevention of phthisis, the following handbill has recently been printed by the Cheshire County Council, for issue to all known sufferers.

DIRECTIONS.

The following directions have been prepared for your information and guidance, and you are requested to follow closely the advice therein given :—

1. Do not swallow your expectoration
2. Do not spit on the ground, floor, or fireplace, but expectorate into a proper vessel containing a liquid disinfectant. Once or oftener during the day be careful that the contents of the vessel are emptied into the pan of the water-closet
3. When away from home and unable to make use of a spitting cup, expectorate into a piece of rag, which can be burned on arriving home. If the pocket-handkerchief be used for this purpose, *the expectoration must not be allowed to become dry*, so on arrival home take immediate steps to disinfect the soiled handkerchief by boiling it for 10 minutes. It may afterwards be washed in the usual manner.

Pocket spitting cups can be bought at a small cost.

4. Keep your room at home aired and *free from dust*, and open the windows before you leave the room. If there is a fireplace in the room do not stop up the chimney, but always keep it free for the passage of air.

5. *It must be distinctly understood that spitting cups are to be used when possible, and that the handkerchief is only supplementary*, to prevent spitting on the ground, floor, fireplace or elsewhere.

Bronchitis, Pneumonia and Pleurisy.

The deaths from these causes number 341, of which 157 occurred in the first five years of life, and 184 after the completion of that period. These deaths represented a rate per 1,000 previous living of 4·6, which approximates to the average for Cheshire and Lancashire. Mortality was highest from this cause in Portwood and the Middle Ward (6·2), lowest in Edgeley (3·8), and Heaton Norris (4·09).

Very many houses built in your district come to be inhabited almost before the builder's workmen are out of the house, and in many instances long before the walls are properly dry. Whether this fact have any bearing on the heavy mortality from chest complaints is a matter which might repay investigation.

The Isolation Hospital.

The following particulars which have from time to time been asked for by different Authorities, may with advantage be here recorded :—

SITE.—An area of three acres, one rood, at the junction of Dialstone and Cherry Tree Lanes, one mile six furlongs and 186 yards from the Court House. The nearest point of the pavilions is 79 feet from Dialstone Lane, 63 feet from Cherry Tree Lane, 524 feet from Castle Farm House, 456 from No. 109, Cherry Tree Lane, and 467 feet from Alderman Robinson's house. The subsoil is yellow boulder clay.

COST.—

	£	s.	d.
Cost of Buildings	4635	13	4
Cost of Site	1346	14	0
Cost of Furnishing	606	0	8 (to March, 1893)

ACCOMMODATION.—Consists of central administrative block and two detached pavilions (north and south). The central block contains on the ground floor, kitchen, scullery, matron's parlour, and a dispensary. Upstairs are bathroom, matron's bedroom, large bedroom for three servants, and three nurses bedrooms. In basement are linen store, boiler for heating apparatus, and cellars. Each pavilion is approached from the central block by covered corridors, and is a single storied building. It is entered by a hall leading to a passage into which opens the doors of its three constituent wards. Two of the wards each contains 12,096 cubic feet, and the third or intermediate one 4,410 cubic feet. Each wing contains also a bathroom with movable bath, a nurses' room, and store cupboard. The administrative block and the southern wing have been recently provided with waterclosets : in the northern or typhoid wing remain the original earth closets, scavenged from outside. The hospital was opened for the reception of patients in 1881.

CASES TREATED FROM 1888 TO 1892 INCLUSIVE.

	1888.	1889.	1890.	1891.	1892.
Smallpox	98	0	1	0	6
Scarlet Fever	35	36	91	32	26
Typhus	3	0	0	0	1
Enteric	12	14	22	15	16
Diphtheria... ..	0	0	2	1	2
Other diseases	1	16	4	0	0
	149	66	120	48	51

PAYMENTS BY PATIENTS. *

			£	s.	d.				£	s.	d.
1888	...	...	108	4	6		1891	...	25	7	0
1889	...	...	591	10	9		1892	...	150	18	6
1890	...	...	122	14	6						
									£998	15	3

NETT COST OF MAINTENANCE. *

			£	s.	d.				£	s.	d.
1888	...	...	715	0	2		1891	...	928	6	2
1889	...	...	864	19	0		1892	...	509	19	8
1890	...	...	607	16	2						
									£3626	1	2

* These statements have been kindly furnished by the Borough Treasurer.

All patients resident within the Borough are admitted free of cost. Members of the families of ratepayers in the Borough who live outside, are charged 25/- per week. The Guardians' patients and those of other sanitary authorities are charged 2½ guineas each per week.

In the following table is set forth particulars in regard to the unusually large number of patients isolated during the year 1893, owing to the exceptional amount of zymotic disease. The beneficial influence of the hospital in enabling you to suppress the outbreak of smallpox, to check the prevalence of scarlet fever, and deal with the enteric fever epidemic was most marked.

	In Hospital Jan. 1st, 1893.	Admitted.	Recovered.	Died.
Scarlet Fever	5	122	116	6
Enteric Fever	1	84	69	15
Smallpox ... ..	...	22	20	2
Diphtheria ... ..	...	9	6	3
Erysipelas ... ..	...	1	1	...
	6	238	212	26

Average length of isolation for smallpox cases 28½ days.

" " " scarlet fever cases 48½ days.

" " " enteric fever cases 36½ days.

SUMMARY OF HOSPITAL EXPENDITURE 1893. *

	£	s.	d.
Salary and Wages	446	11	7
Food Account	537	7	1
Instruments and Drugs	54	18	0
Coal, coke, gas, and water	105	2	11
Rent of Telephone	15	3	2
{ Bedsteads, bedding, stepladders for visitors, chairs, linen, macintoshes, &c.	107	12	1
Painting walls and varnishing floors of southern pavilion	48	10	0
Extension and repairs of heating apparatus	95	6	4
Other repairs, &c., to hospital, out-offices, fever van, &c.	112	5	10
General District Rate and Insurance ...	16	8	6
Second hand clothing for patients	4	19	0
Other miscellaneous expenses	40	16	5
	1585	0	11
Less amount received from other authorities for isolation of their cases... £	122	12	0
Balance, being excess of expenditure over income	£1392	8	11

* Summary of Statement kindly furnished by the Borough Treasurer.

ADDITION TO STAFF.—In January, 1893, the newly appointed steward and matron, the latter being a trained and certified nurse, commenced their duties, which they have since discharged most efficiently. During the spring two probationers were employed at a salary of £14 per annum and uniform, and upon my recommendation a trained nurse was subsequently appointed in lieu of a nurse whose services were dispensed with. A cook, wardsmaid, and laundress were also permanently employed, and the provision, when required, of a man to help with the disinfecting apparatus was sanctioned.

STRUCTURAL ALTERATIONS, &c.—During the month of July, the floors of the southern pavilion were stained and varnished, and the walls painted. Much hygienic advantage and economy of labour has resulted from this improvement. In addition, an underground passage for hot water pipes by which the two wards were found to be in aerial communication, was satisfactorily bricked across in two places, the partitions being faced with cement. A discharging house and bathroom were also provided.

Provision of separate Hospital Accommodation for Smallpox.

The occurrence of a case of smallpox on 24th August, when one of your pavilions was occupied by enteric, and the other by scarlet fever, brought this matter to a crisis. Having represented to the Chairman of the Sanitary Committee the difficulty of the situation, and the fact long since laid down by the Local Government Board that smallpox wards work harm to closely erected wards for the treatment of other diseases, I was permitted to take the responsibility of utilizing Whitehill House for the reception of this patient, a purpose for which by its size and isolated position, it is perhaps better adapted than any other readily obtainable building. I understand that when purchased it was regarded as a possible auxiliary infectious hospital, and its availability on this occasion was most opportune, especially as regards the welfare of the numerous sufferers in the Isolation Hospital at the time. Quite recently this house has been extensively altered for purposes of isolation, and a deep well has been sunk, as the water from the pre-existing shallow well was found to be polluted. Whitehill Hospital is situated 205 yards from the nearest inhabited building (a large mill), and there are comparatively few houses within a quarter of a mile radius.

The cubic capacity of the rooms is as follows :—

GROUND FLOOR.—No. 1 to east of hall, 8945 cubic feet.	
No. 2 to west of hall,	3506 „
UPPER FLOOR.—No. 3, Large Ward, 7480 „	
No. 4, room over hall,	1028 „
No. 5, room over No. 2,	2772 „
No. 6. room off bathroom,	1980 „
No. 7, room between No. 6 & No. 3,	1203 „

NEED FOR FURTHER HOSPITAL ACCOMODATION.

Almost the last official act of Dr. EDWIN RAYNER, J.P., the late Medical Officer of Health, was to point out the necessity for further hospital accommodation. A generally accepted rule is that in large communities, one bed should be provided for every thousand inhabitants. Each patient should in addition be allowed 2,000 cubic feet of air-space, 12 feet of wall-space, and 144 square feet of floor-space, and that there should be means of separately isolating at least 4 kinds of infectious disease. In addition, in connection with all fever hospitals, a quarantine or observation ward for suspicious cases is highly desirable. At present, however, you have no observation ward, and only possess the means of isolating 3 kinds of infectious disease, even with Whitehill. For though there are 3 wards in each of the 2 pavilions at Dialstone Lane, there is only safe accommodation for 2 classes of infectious disease there, as the 3 constituent wards of each

pavilion are in direct communication with each other. As regards the number of beds available, Dialstone Lane affords regulation cubic capacity for 28 adult patients, though during the typhoid epidemic a much larger number had to be accommodated. Whitehill will accommodate, say 15 patients without serious overcrowding. This makes a total of 43 available beds. Now, the population of the town is, say 73,000, and it is rapidly increasing. The provision of 75 to 80 beds altogether for the purposes of isolation is, therefore desirable, and would not be at all excessive.

Another matter to which I have already drawn your attention is the necessity for further provision for the nurses both as regards sleeping accommodation and a day-room. The matter has been referred to the Surveyor, but has so far been crowded out by the pressure of other important work in his Department. Finally, the provision of a high unclimbable railing or fence round the hospital grounds is a matter which requires early attention, as well as the partitioning off by similar fences of the grounds used by different classes of convalescents. A complete set of forms and regulations as to admission of patients, answers to inquiries, visiting by friends, notice of serious danger, and of readiness for discharge have been drawn up by me and sanctioned by the Sanitary Committee. Notices have also been conspicuously posted in each ward requesting that any cause of complaint in regard to food or treatment may be reported to the Medical Officer on the occasion of his next visit to the ward.

Disinfection.

Towards the end of the year 1892, it was observed that the Frazer Disinfecting Apparatus which had done good service for many years, and which at the time of its erection, was one of the best obtainable, was no longer capable of discharging its function with the same efficiency as hitherto. This condition of things became rapidly worse, and at the beginning of the year under notice, was the subject of consultation between the late Medical Officer of Health and myself, the outcome of which was that at their meetings of the 14th and 28th January, the necessity for the immediate provision of a new apparatus was impressed upon the Sanitary Committee. A sub-committee consisting of Messrs. Bell (chairman), Hancock (vice-chairman), Gould and Lee, was formed to deal with the matter. This sub-committee visited Leeds and Halifax, to inspect the disinfecting apparatus in these towns, and ultimately the purchase of one of Messrs. Goddard, Massey, and Warner's large "Nottingham" disinfectors was decided upon. A suitable disinfecting house of the best material and lined throughout with glazed bricks, was then rapidly erected for the reception of the apparatus; two bath-rooms, each consisting of undressing room, bath-room proper and dressing room, were provided, the water for same being heated by means of a steam coil in connection with the disinfecter. Some unavoidable delay was experienced in this important work, but in June it was completed, and during the latter half of the year, 5,148 articles were disinfected, and 167 members of infected families bathed while their infected clothing was being dealt with. The total cost of the disinfecting station was £815 5s. 5d., including £6 10s. 0d. cost of preliminary inquiry. Prior to the completion of your disinfecter, infected clothing was dealt with at the Lady Well Sanatorium, Salford, through the courtesy of Dr. MULLEN, the medical superintendent.

DISINFECTING OF INFECTED HOUSES AND SCHOOLS has been energetically carried out. Walls, floors, furniture, &c., have been washed with corrosive sublimate solution, and fumigated while damp with sulphurous acid gas. This "fumigation" has however been carried out only in deference to popular opinion, and in future

will be dispensed with. It is hopelessly unreliable under the ordinary conditions of practice, and is in addition wrong in principle, for it should not be our object to attempt to purify infected air, but rather to get rid of it altogether by free ventilation. During the year 890 rooms in dwelling houses, together with 9 schools were cleansed and disinfected.

METHOD OF DEALING WITH CASES OF INFECTIOUS SICKNESS.

An inspector at once visits each case reported, and is provided with directions as to points for systematic inquiry in regard to possible sources of infection, means of isolation adopted and available, sanitary condition of premises, &c. Wherever isolation at home appears to be impracticable, removed to hospital is advised and is rarely seriously objected to. A supply of colored corrosive sublimate solution is furnished: cautionary notices are left at the house and those on each side of it, and if the case is not removed, a post card is left for signature by the medical attendant, and is returned to this Department when the case terminates and disinfection of the premises can be carried out. A notice is in addition served on the parents requiring them to keep the other children from school and communications are sent to the schoolmaster, to employers of labour, and to the public librarian. In cases presenting any suspicious grouping or obscure features I inquire personally into their history, and in this way during the year 1893, investigated upwards of 600 cases. I have interviewed nearly all the schoolmasters of the town in order to secure their valued co-operation. In addition, I have personally questioned the scholars in 5 large schools, and separately examined each of those presenting any suspicious symptoms. Finally, in regard to disinfection, I wish to point out that to make your system still more perfect, the provision of one or two empty cottages or small houses, for the temporary reception of those whose houses are being disinfected, is very desirable.

Cemetery.

This consists of 28 acres of sandy mould overlying boulder clay, and of a known depth throughout of at least 20 feet, situated about a mile from the centre of the town and between the Buxton Road and the Tin Brook. It has been in use for more than half a century. There is no great aggregation of houses in the immediate vicinity.

In Stockport metallic coffins are frequently referred to as "Sanitary," and I have known people who could ill-afford it, incur additional expense to obtain one in cases of infectious disease. This idea is, however, quite erroneous, for the frailest coffin that will decently and safely retain its contents till burial is effected, and thereafter afford least resistance to the processes of decomposition is undoubtedly the most "Sanitary."

Public Water Supply.

At the request of the Mayor (Mr. Councillor John Turner, J.P.) and the Chairman of the Sanitary Committee (Mr. Councillor William Bell), I commenced a detailed inquiry into this question in April, 1893. On September 6th, 1893, a special Committee of Inquiry was appointed to which I have since presented a lengthy report. This Committee visited the Disley Catchment Area, and the High Lane Filtering Works, and witnessed several serious sources of pollution from farmsteads, &c., which have since been remedied owing to the Committee's action. The chief point to which I now wish to draw attention is the desirability of effecting some arrangement, either with the Water Company or otherwise, whereby the freer use of water for flushing the public sewers, &c., will be rendered feasible. The

importance of such cleansing cannot be over-rated, and is now so widely recognized that in several sea-side towns a special supply of sea-water for this purpose is piped to the chief main sewers. Whether it would be practicable, and in the long run cheaper, for you to similarly provide and utilize deep well-water for this and other municipal purposes is a question for your Engineering and Financial Departments, but it is perhaps possible that the suggestion might be worth consideration.

SHALLOW WELLS.—There are very few, if any, of these in use. During the year the water from three wells of this kind was found to be polluted and the wells were closed. The same remark applies to the water of a shallow well, now disused, at Whitehill Hospital.

Public Baths.

The Public Baths opened in 1886 are exceptionally good. A first class hot bath costs 4d, a second class ditto 2d. Admission to the first class plunge bath costs 6d. before, and 3d. after 12 o'clock noon. The second class plunge bath is used chiefly by boys to whom a charge of 1d. each is made. Turkish and vapor baths are also provided. The water in the plunge baths is changed twice a week. The average number of bathers per week is 1811.

Meteorological Station.

There is a station, which might be a very good one, in Vernon Park, at an elevation of 260 feet above sea-level. More instruments are, however, necessary, and especially 1-foot, 2-foot, and 4-foot earth thermometers. The relation of earth temperatures to epidemic diarrhoea and to typhoid has been already referred to, and it is important that these readings should be recorded, and further, that the readings of all instruments should be regularly reduced and corrected.

Chief Industries.

Felt-hat making, cotton-spinning, bleaching, weaving, and printing are the chief industries of the town, but there are several large breweries and other important commercial undertakings. The influence of these various occupations on the health of the operatives engaged therein is a subject for future inquiry.

The Rivers Mersey, Goyt, and Tame.

These are, of course, at present grossly polluted with the sewage and trade effluents of this and other towns, but the inspector for the Brinksway district reports that the bank was freer from refuse than heretofore. My attention has been drawn to a portion of the river bank at the bottom of Ford Street, the present condition of which is very objectionable, but which might apparently be easily reclaimed and converted into a valuable plot of land.

The Housing of the Working Classes.

In the oldest portions of the town, the houses occupied by the poorer classes are, as a rule, very insanitary, having been built many years ago, and quite regardless of the principles embodied in your modern bye-laws. In these black spots, cellar-dwellings and back-to-back houses are numerous, privy midden nuisances, defective conditions of internal and external air-space and lighting, &c., abound. In many cases the houses have no slopstones, and the

tenants will not carry their waste-water to the nearest grid, but throw it on to the street or yard, the latter being often unpaved. In other cases, yards are intersected with long imperfect brick channels or gutters which cause great offence in warm weather, and danger during times of frost. It is obvious, however, that for several reasons the removal or amelioration of these houses must of necessity be gradual. During the year I reported 92 such houses to you as unfit for human habitation and notices were shortly after served on the owners.

In districts of recent growth the houses of the poorer classes are very much better in every respect, but the very general existence in connection therewith of privy-pits instead of water-closets is unfortunate.

House-Drainage.

In the older parts of Stockport, as of most other towns, house drains are of the objectionable square bricked or flagged pattern. Occasionally, untrapped openings to these drains, within or close to the dwellings are yet to be found, and in a small and rapidly decreasing number of cases the slopstone-waste-pipe is directly connected to the sewer, or inefficiently disconnected therefrom by a simple syphon-bend beneath the sink-tray. In addition to the water from the slopstone, these old drains receive the rain and surface water, and in some cases urine &c., from the house, though too often the latter is thrown into the ashpits and is an important cause of their offensive condition. These old drains are of course not disconnected from the sewers, and are ventilated through the rainwater pipes and through such untrapped openings as still exist.

In new buildings, glazed earthenware socketed pipe drains are insisted upon, but so far cement-joints have not been required, puddled clay being used instead. With regard to ventilation and disconnection, the custom in Stockport of building in blocks of six or eight houses or more, with a 9-ft. passage between the blocks, admits of everything being drained to the back except rainwater from the front-roof. Every house has a separate drain within its own curtilage, leading to the branch-sewer in the 9-ft. passage at the rear. The drain of every new house provided with internal water-closet, bath, lavatory, &c., must have a separate ventilating shaft and disconnecting trap. If, however, the houses have no internal drainage fittings, it is deemed sufficient to place one disconnecting trap in a brick chamber at the junction of the branch-sewer (in the 9-ft. back-passage) with the sewer in the public street, and to provide a 4-in. ventilating pipe for every 3 or 4 houses, and a large ventilating shaft at the highest point of the system of drains belonging to each block. This arrangement is found to work well, and I am fully in accord with the Borough Surveyor, who is responsible for it, as to its sufficiency for practical purposes.

In reports presented to the Sanitary Committee during the year, I drew attention to the facts that the rainwater pipes were, as a rule connected directly to the drain without the interposition of a gully-trap; that the joints of these pipes were as a rule open, and that in many instances such pipes were close to bedroom windows. It is satisfactory to record that in regard to new buildings disconnections of these pipes at foot is now insisted upon, and that airtight joints are also required. Of course, large numbers of these pipes in old property are still open-jointed, but on the 14th August, the Sanitary Committee passed a resolution requiring all such joints to be made good, and a considerable improvement has already been effected.

Sewerage System. *

This consists of—

- (1) A FEW OLD SQUARE FLAGGED SEWERS.
- (2) SEVERAL BROOK-COURSES, AND BROOK-CULVERTS.
- (3) COMPARATIVELY RECENT AND NEW SEWERS.
- (4) THE INTERCEPTING SEWERS AND OUTFALL WORKS.

(1) A FEW OLD SQUARE STONE AND BRICK SEWERS still exist in the older parts of the town. The most important of these are in Park Street, part of Millgate (from Corporation Street to Market Place): Warren Street : Vernon Street : Great and Little Underbank : Bridge Street : Lower Hillgate : High Street : King Street East: and Corporation Street. Total length, $1\frac{1}{4}$ miles.

These sewers are without any means of ventilation except through such rain-pipes and untrapped openings as communicate with their branches. Access to them for cleansing purposes can only be obtained by digging down to them, a measure which has occasionally to be adopted to remove obstructive accumulations of deposit. Their very steep gradients (in most cases) render these old sewers much less liable to obstruction, however, than in towns such as Leicester, where the sewers possess little fall.

It may be here recorded that in some streets, duplicate sewers exist, the old one not having been removed when the more modern one was made, and some houses still drain into the old original sewers where new ones exist in the same street.

It is of course very desirable that these old defective sewers should be replaced by sewers of modern construction, as soon as it can be afforded.

(2) BROOK-COURSES AND BROOK-CULVERTS.—The most important of these are four in number so far as I have been able to learn with the valuable assistance of the Highways Department.

A. Heaviley or Black Lake Brook.—Formed by (a) a stream which originates at Cherry Tree Farm, passes behind Messrs. Haines' Towel Factory, through Lake Street, across Buxton Road (opposite Mile End Hall), along the Bramhall side of the road to near Pear Tree Cottage, where it recrosses the Buxton Road, and passes to the east of Heaviley Schools, the Bamford Arms and the Cemetery to join Hemphshaw Brook, and thence to the Tin Brook.

(b) A stream which commences near Stepping Hill, passes under and receives the sewage from a number of houses on the eastern side of the Buxton, Road, and joins the preceding stream at the junction of Lake Street and Buxton Road.

(c) A stream on the western side of the Buxton Road, in the district of the Stockport Rural Sanitary Authority, commencing in the neighbourhood of the "Dog and Partridge," and eventually entering a pipe sewer on the ground of the Mile End Nurseries through which it passes into (a).

It is known that the sewage from several houses in Kennerley Grove Lane on Buxton Road, at the South side of Park Road and on the South side of Woodsmoor Lane enter this Brook, which is, as already stated, outside your Borough.

* I am indebted to the Highways Department for much information on this subject.

B. Brownhousefold Brook.—This receives the drainage from a few houses in the Offerton Lane, and from Victoria Park. It joins Hempshaw Brook, and eventually the Tin Brook.

C. THE Tin Brook is a continuation of the Hempshaw Brook formed by the junction of Heaviley and Brownhousefold Brooks. There is no property drained directly into the Tin brook itself, for in 1871 a sewer was laid adjacent to the brook course, and the owners of all property draining thereinto, were compelled to connect their drains to the new sewer.

As the waters of the 3 preceding brooks are conserved for manufacturing purposes, it is desirable that their contamination by sewage should be prevented as soon as possible.

D. A Brook commencing in the neighbourhood of Daw Bank and Gradwell Street, passing in a north-western direction through the district of Wood Street, and across Chestergate to the river, The influence which this brook has had on the position of the blocks of houses which used to drain into it, and which were built parallel to that portion of the stream which they faced is still perceptible.

E. Stitch Brook, Heaton Norris.—This receives the drainage of the district of Whitefield and part of Wellington Road North, and also that from Manchester Road and part of Old Road. This brook, which is a Public Sewer, is culverted and passes under no property, traverses Brunswick Street, and eventually gets into the George's Road sewer.

(3) COMPARATIVELY MODERN AND NEW SEWERS (ABOUT 50½ MILES).—I am informed that most of the remaining sewers of the town are of comparatively modern construction. The mileage of those made prior to 1870, is 28¾; those made since that date have a mileage of 21¾. Some of these are pipe-drains, others are round or oval brick sewers. Manholes and lampholes to the number of about 1100 for purposes of ventilation, are placed alternately at distances varying from 150 yards in the older sewers, to about 50 yards in those of recent construction. A lamphole is provided at the dead end of each sewer. Each lamphole consists of a 9-inch pipe shaft from crown of sewer to surface of road, over which is placed a perforated cover 12-in. in diameter. Since 1893, the Highways Department has adopted a new form of rectangular cover to prevent ingress of dirt to the sewer. The manholes are 2-ft. 6-inches square in the shaft, but widen out below forming a chamber 2½-ft. by 5-ft. The only other means of ventilation on most sewers is through the rain-pipes.

In my special report of 8th August, I recommended the erection wherever possible of shaft ventilators carried up the sides or ends of houses away from all windows and chimneys and in addition the construction at intervals on sewers of steep gradients of flap-valves, &c., whereby the sewer air of each section is forced to escape through the ventilator existing in connection with the flap-valve. Since then 35 of these ventilating shafts have been erected in the areas most affected by typhoid, and the Highways Department are still seeking permits for the erection of further shafts at the head of each system of main sewers, and especially in districts of greatest incidence of typhoid. Where one of these shafts is erected, the nearest ventilator is closed by a movable iron cover, which is only removed for purposes of inspection. In addition, though "flaps" have not been constructed, the same end has in the Hempshaw Lane and other sewers been affected by the provision, at suitable intervals, of disconnecting traps in the inspection chambers.

In regard to the provision of flushing apparatus, whereby every sewer may be flushed from its upper or dead end, as recommended in my special report of August 8th, the Borough Surveyor has kindly furnished the following

LIST AND DESCRIPTION OF AUTOMATIC FLUSHING TANKS :—

POSITION.	DESCRIPTION.	ACTION.
Dialstone Lane near Buxton Road end, Stepping Hill (top of sewer.)	1200 Gallons capacity "Field's" syphon, 12-inch discharge outlet.	Flushes Dialstone Lane and Boothby Street sewers.
Dialstone Lane at junction with Cherry Tree Lane (top of sewer.)	800 Gallons capacity Field's "syphon, 12-inch discharge outlet.	Is intended to effect the same purpose when deemed requisite.
Grenville Street, Edgeley, at junction with Castle Street (top of sewer.)	400 Gallons capacity "Adams" syphon, 9 inch discharge.	Flushes Grenville Street, from Castle Street towards Hollywood and Brinksway.
St. Matthew's Road at junction with Castle Street.	400 Gallons capacity "Adams" syphon, 9-inch discharge.	Flushes St. Matthew's Road and Chatham Street, towards junction of Grenville Street.
Bury Street, Heaton Norris, at top of sewer at Borough Boundary near Sandy Lane.	200 Gallons capacity "Adams" 6-inch discharge.	Flushes Bury Street sewer throughout, down to Smith Street and thence through same towards Penny Lane, and so to Nicholson Street East.

WHEN DISCHARGED :—

No. 2 has not been put into operation yet as there is no property along the line of the sewer.

The others are arranged to discharge every 48 hours in summer, and every week in winter.

In addition to the foregoing, a movable flushing apparatus capable of rapidly discharging 300 gallons at any lamphole over which it is placed has been provided, but it is of very small capacity compared to the flushing vans in use at Salford, Leicester, &c., some of which hold 1,000 to 1,500 gallons.

The importance of perfecting as far as is possible the system of sewer-cleansing and ventilation cannot in my opinion be exaggerated in regard to its influence on the public health. In an important report presented by the Special Purposes and Sanitary Committees to the Metropolitan Board of Works in 1886, the simultaneous and copious flushing of house-drains by householders on stated days and hours is recommended as one of the most effectual means of flushing the sewers, and it seems probable that a great number of householders would be willing to co-operate with you in thus improving the condition of the sewers in your district. Apart from this, however, I beg to direct your attention to the necessity which I believe exists for the provision of one or more larger flushing-vans, and of many more larger automatic flushing tanks, the value of which is daily becoming more and more widely recognized. In Croydon, 40 flushing tanks, each of from 2,000 to 3,000 gallons capacity are in use. In Leicester, where during 1893, an epidemic of typhoid occurred, causally related as is believed to inefficient sewer-ventilation and cleansing, the Corporation have been advised to provide at important points on the chief lines of sewers flushing tanks of 2,000 or 3,000 gallons capacity : at the upper ends of each of the district sewers tanks of 1,000

gallons capacity : while at the dead end of each branch sewer it is proposed to provide a manhole of 500 gallons capacity, with a flushing penstock or disc-valve enabling it to be filled with water by a hose pipe and utilized as a flushing chamber. The Borough Engineer (Mr. MAWBEY) also emphasises the necessity of periodically cleansing the upper surfaces of the large main-sewers, which may be done with a hose pipe.

A practical difficulty in this way of systematic and thorough cleansing of the sewers is, I understand, the present heavy cost of water, and as the matter is one vitally affecting the health and welfare of the Borough, it is to be hoped that some more satisfactory arrangement in this respect may be speedily arrived at.

With regard to the ventilation of your sewers, the desirability of a widely extended provision of ventilating shafts as recommended last year is, I believe, fully recognized by you, and the present practice of shutting up with a movable cover, the surface-grating adjacent to the ventilating shaft seems to have given most satisfactory results not only in Stockport but elsewhere. Mr. MAWBEY of Leicester, whose opinions I have alluded to, recommends that instead of wooden poles being used on the highways for Telephone and Telegraph wires, steel shafts should be adopted having a sectional area about equal to a 9-inch pipe. He points out that in some cases these shafts would answer the threefold purpose of ventilating shaft, lamp column and telegraph or telephone pole.

THE INTERCEPTING SEWERS AND OUTFALL WORKS.

The sewage and rainfall requiring to be dealt with in the Borough are at present discharged direct into the river within the Borough from about 30 main-outlet sewers and watercourses. To intercept this sewage and surface water, very extensive works are being carried out under the supervision of Mr. A. M. FOWLER, M.I.C.E. at a cost of about £100,000. The principal feature of the Engineer's scheme is the provision of 5 main intercepting sewers, the course of which may for the purpose of future reference be very briefly outlined as follows :—

1st MAIN SEWER (3-ft. to 7-ft. diam). Commences opposite Vernon Park Gate, traverses Carrington Road, Great Portwood Street, Wharf Street, and thence beneath Castle Hill to opposite the White Lion, in Underbank, and forward through Chestergate, Brinksway and Cheadle Heath, to terminate at Heathside Farm on the left bank of the Mersey, 300 yards west of Messrs. Melland & Coward's bleachworks.

2nd and 3rd MAIN SEWERS. (12-in. to 18-in. and 18-in. to 24-in. diam). Both commence near Stringer Street, Newbridge Lane. One passes eastward and the other westward to join the 1st main sewer near Vernon Park, and the east end of Queen Street, respectively.

4th MAIN SEWER (3-ft. diam). Collects sewage from district between Lancashire Hill and the River Tame, crosses beneath junction of Rivers Tame and Goyt, and traversing King Street, joins the 1st main sewer near Queen Street.

5th MAIN SEWER (18-in. diam). Will intercept sewage from Heaton Norris side of river, tapping the important main sewer in Heaton Lane, Travis Street, and Brinksway Road. Commencing near Brinksway Bridge, it crosses almost at once in a straight line under the bed of the river to join the 1st main sewer on the Brinksway side.

Ventilation is to be effected by openings in the carriage way and the erection of shafts on buildings, away from windows, &c. In view of recent experience in Stockport and elsewhere, it is to be hoped that it will be found possible to erect a sufficient number of the latter to obviate to a large extent, the necessity for road surface ventilators. At the Outfall Works the sewage will be pumped 17ft. 6in. into tanks, there treated chemically, and then discharged intermittently

upon underdrained and levelled filter beds, through which the effluent thus purified will pass into the river. The Corporation possess 95 acres of land at Heathside Farm, and it is proposed to appropriate by degrees 63 acres for sewage purification. The Engineer states that it is well adapted for this purpose, being composed of sharp gravel and sand.

Mr Fowler has made provision in the outfall sewers for the sewage from upwards of 140,000 people, and at the Outfall Works, which can at any time be extended, for dealing with the sewage of 107,400 persons, the figures at which he estimates the population 30 years hence.

Excrement and Refuse Disposal, and Scavenging.

It was estimated in December of 1893, that there were between 5,000 and 6,000 privy-pits, and about 1,250 water-closets with dry ashpits. It was reckoned that about 250 water-closets were of the slop-water type. Many of the privy-pits, especially in the older portion of the town, are faulty in the extreme, none that I know of can be considered really satisfactorily water-tight, while a very large number being very leaky, are responsible for wholesale soil-pollution. In many instances these privy-pits are within a few feet of the door, and I know of many actually abutting on the walls of dwelling houses (the exact number in 1885 was 186) their liquid contents of course, soaking into the foundations. In the newer portions of the town where houses are built in terraces, one privy-pit ordinarily serves for two houses, but in the numerous courts of the older parts, one enormous pit usually exists in the middle of the yard, the common receptacle for the excreta and house refuse of the inhabitants of from six to, in one case, 36 houses. Owing to their size, structural defects permitting dampness, and the very usual deposit therein of slops, vegetable and animal refuse, these pits are generally excessively foul, and the air of the court yards in which they are situate correspondingly offensive, especially in hot weather. The scavenging of these privy-pits is carried out at night by a staff of 18 gangs of 3 men, each with a cart. The contents of the privy are transferred to barrows, then heaped in the public road, and finally loaded into the carts which take it either to the farms at Cheadle and elsewhere, or to the tips at Whitehill, Newbridge Lane, and Charles Street. Apart from the fact that at some 60 of the oldest houses in the Middle and St. Thomas's Ward, the privy contents must be carried through the living rooms, the fouling of the surface of yards and roads and of the atmosphere which is inseparable from this scavenging, constitutes a nuisance of the gravest kind. In the faithful discharge of my responsibilities, I must plainly state that in my opinion the great sanitary short-coming of Stockport, and that most essentially injurious to the public health is the existence of this system of privy-pits, the power for evil of which I believe it would be difficult to exaggerate.

The 1,250 water-closets are to be found chiefly in recently built houses, and these conveniences are gradually increasing in number. During 1893, the plans of 423 new houses were passed, of which 156 were provided with privies and 267 with water-closets. Where the latter exist a dry ashpit is provided, and is emptied by the day scavengers. The provision of closet accommodation in mills, &c., is, with a few exceptions, in a very unsatisfactory condition. Common privies exist in most cases: in one or two the only means provided was a very objectionable vertical privy-shaft, with an opening thereinto from each floor of the mill, and discharging below into an open cesspool. This was replaced by w.c.'s on notice from your inspector in one case, while as regards all other factories, notice to provide sufficient closet accommodation has recently been issued by the Surveyor under the Factory Act. In this connection I desire to draw attention

to the fact that several large schools possess only the objectionable midden privy system of closets. In one large mill, in one school, and in a few other isolated cases pail closets are used.

TIPS.

There are at present two tips within the Borough, viz, one in Newbridge Lane, and another in Charles Street, off Hillgate. Several cases of typhoid and of fatal diarrhoea occurred in the neighbourhoods of these objectionable accumulations, and the Newbridge Lane tip being upon the "strike" or "outcrop" of a stratum of porous Permian Sandstone, constitutes a perhaps remote but certainly possible source of danger to the deep well water of the town.

When your sewerage scheme is completed, and the adoption of the water carriage system has become general, the provision of destructors for burning the town's refuse will come within the range of practical, and in my opinion much needed reform, for I am convinced that large accumulations of filth in the neighbourhood of dwellings must be potent for evil.

EFFICIENCY OR OTHERWISE OF SCAVENGING.

I beg to state that 3 of your 4 inspectors have especially called my attention to the necessity for a more general and methodic "block-system" of privy-pit scavenging, particularly in the numerous cases in which one pit is used by the inmates of 12 or more houses. At present, the adaption of this system is not universal in Stockport, the assigned reason being the great variation in size of the privies, associated with the dislike of those using large privy-pits to frequent occurrences of the serious nuisance inseparable from their scavenging. Consequently, while some privy-pits are emptied every 3 months, many others (the inspectors inform me) are emptied but once in 6 or even 12 months. The shortest (3 months) of the periods I have mentioned is much too long, but on the other hand it is useless to ignore the fact that the disturbance and removal of these privy contents usually occasion a much greater *temporary* nuisance than that arising from a half-full privy-pit. The whole question of night scavenging might with advantage, I venture to think, be made the subject of investigation and reconsideration by the Sanitary Committee or some of its members. Appended is Inspector Marshall's return of the scavenging work done during the year.

NIGHT SCAVENGING DEPARTMENT.

29,900 Loads of refuse have been removed from privy-pits, &c., which averages about three loads for each ashpit, and $1\frac{1}{2}$ loads for dry ashpits which is included in this total.

DAY SCAVENGING DEPARTMENT.

858 Loads of refuse have been removed from dry ashpits, which averages about $1\frac{1}{2}$ loads for each ashpit.

5674 Loads of sweepings have been removed from the streets.

638	„	snow	„	„	„
59	„	cinders	„	put on	„
113	„	sand	„	„	„
2868	„	water	„	„	„

Byelaws.

The following is a list of the existing byelaws with the date on which they were sanctioned :—

1. Relating to the Public Baths, 10th August, 1858.
2. Relating to the management of the Markets, November, 1862.
3. *Relating to the Regulation of Vernon Park, 25th May, 1864.*
4. As to level, width, &c., of New Streets and Sewerage thereof.
5. With regard to the Prevention of Nuisances arising from Snow, Filth and the keeping of Animals.
6. As to cleansing Footways, &c.. Removal of Refuse, and cleansing of Privies, &c.
7. For the Regulation of Common Lodging Houses.
8. For the Regulation of Slaughter Houses.
9. *For the Regulation of Hackney Carriages.*
10. With respect to New Streets and Buildings, 6th February, 1884.

5th August, 1865.

I understand that the Byelaws of February, 1884, with respect to New Street and Buildings continue to be the subject of revision by a special Subcommittee appointed in September, 1893,

With respect to the other Sanitary Byelaws, a report will shortly be presented, in pursuance of an instruction to me by the Sanitary Committee.

General Inspection of the District.

The Borough is, for the purposes of inspection, divided in four districts, one of which is allotted to each of your inspectors. The work was in general carried out to my satisfaction, but the unusual epidemicity interfered seriously with systematic inspection, as the visitation of all, and the removal of many cases of reported infectious disease, together with inquiries into all deaths occurring under five years of age, occupied much of the inspector's time. Nevertheless, a good deal of efficient work was accomplished as will be seen from the appended summary of notices served :—

INSPECTOR.	DISTRICT.	Provision and repair of gully-traps and drains.	Repairs and alterations of privy-pits.	Disconnection of waste-pipes from sewers.	Provision of Water Closets.	Removal of manure and other refuse.	Cleansing of Premises.	On account of overcrowding.	Miscellaneous.	Totals.
J. MARSHALL.	Portion of Middle. St. Thomas' and St. Mary's Ward.	103	50	47	2	9	11	0	17	239
C. R. BILLINGHAM.	Heaton Norris Ward	200	83	39	2	23	34	3	26	410
J. McMILLIAN, from Jan 1st, to April 22nd.	Portwood Ward and a portion of St. Thomas' and St. Mary's Wards.	36	7	12	1	4	5	0	4	69
J. S. FOSTER. From May 22nd, to Dec. 30th.	do.	124	26	11	2	9	12	0	10	194
C. W. LASKEY.	Edgeley Ward and a portion of Middle Ward.	263	76	75	2	16	14	7	22	475
	TOTALS ...	726	242	184	9	61	76	10	79	1387

In addition, in many instances nuisances were abated and improvements effected as the result of verbal representations to property owners. As the service of formal notices was not necessary in these cases, they are not included in the foregoing summary.

The following are a few of the more important works executed in consequence of the above :—

The provision of a 12-inch main drain down Brinksway Bank, and between Frederick Street and Hunt Street.

The replacement by latrines, of very offensive privy shafts and open cesspools at the Heapriding Mill.

The replacement by water-closets, of a foul privy-pit behind 53 and others, Shaw Heath.

The replacement by water-closet, of foul privy-pits under bedroom of 24, Royal George Street, and 1 and 3, Bowden Street.

The provision of new drains with gully traps for 22 houses enclosed by Heron Street, Bakewell Street, Chapel Street, &c., and much other similar re-drainage of courts and groups of houses.

The provision of water-closets at 5 houses in Bury Street, and at Lancashire Hill Schools.

The replacement by socketted pipe drains, of offensive open drainage channels in yard behind 38 to 48 Longshut Lane East, 12 to 18, Epplestone Street, 90 to 96, Hatherlow St. and 139 to 154, Gt. Portwood Street.

The provision of a ventilated and disconnected system of drainage for the Sun Inn yard and the consequent abatement of a great nuisance.

The provision of a ventilated and disconnected system of pipe drains in yard behind 4 to 16, St. Petersgate.

The replacement by properly ventilated and disconnected pipe drains, of defective brick drains at 65 to 73 Hall Street.

The partial purification of the Great Moor and Heavily Brook, by the diversion therefrom of the contents of a privy and the drainage of 10 houses.

In this connection I desire to draw attention to the gross incompetency of most men who are employed to relay drains and comply with other notices of a similar kind, and who have not, as a rule, the least idea of how such work should be done. In some instances I have had to direct the inspectors to almost stand over such labourers, and in one important job the inspector was forced, for 17 days, to spend on an average three hours per day in seeing that the work was not "scamped." It would be much more satisfactory from a sanitary point of view, if, as in Manchester, such work were undertaken by the Corporation's own men, or failing this, that a list of efficient drain-layers be registered. The extension to the provinces of that provision of the Public Health Act (London), 1891, which enacts a heavy penalty for "scamping" work done in compliance with notice, is also most desirable.

COMPLAINTS OF NUISANCES BY THE PUBLIC.

142 of these were registered in the office. In addition, a very large number were made verbally to the inspectors in going through their districts.

MILKSHOPS AND COWSHEDS.

86 Dairies were entered on a revised register which was prepared during the year, a number of unlicensed vendors being thereby detected and placed under frequent supervision. In many instances special inspections of milkshops were made by myself in connection with cases of infectious disease. One milkshop was found to be in an extremely dirty condition, but in most cases they were fairly clean. The great majority of these milk vendors live in small houses, the front room of which is used for the sale of small quantities of milk, and usually in addition as a general shop also. Fortunately, however, most of the milk sold by these retailers never enters their houses but is transferred at the door from the farmer's cart to the milk-sellers. On the other hand I have frequently noticed empty milk cans standing in yards in close contiguity to privy-pits, and in one group of typhoid cases with community of milk-supply, I am of opinion that the milk if infected, became so by air borne impurities from the privy.

In connection with this group of cases, visits were made to the farms at Cheadle Hulme and Poynton, with the results stated under the heading of Typhoid Fever.

Towards the close of the year, circulars and placards were drawn up by me directing the attention of milk-sellers to the provisions of the Dairies Cowsheds and Milkshops Order, and I subsequently framed from two published codes, a set of Byelaws for the better ordering of these places. These were approved by the Town Clerk, and have since been sanctioned by the Local Government Board.

The number of Cowsheds within the Borough is seventeen.

BAKEHOUSES.

These numbered 49, were regularly inspected and were placed on a revised register during the year. In the majority of cases their condition is fairly satisfactory, but the ventilation and lighting of a few cellar bakeries are far from perfect.

In the month of December, a placard was issued calling the attention of all bakers to the provisions of the Factory and Workshops and of the Public Health Acts, relating to their trade.*

SLAUGHTERHOUSES.

These number 41, were regularly inspected, and were placed on a revised register during the year. Some of them are very good, the majority are fairly good, while a few of them are structurally ill-adapted for the use to which they are put. In every case a good supply of water is laid on, and they are kept in a fairly satisfactory condition.

* A similar circular was issued some months later by the Local Government Board or the London County Council to all the Metropolitan Vestries, in consequence of complaints received as to sanitary condition of the London Bakehouses.

In connection with the question of meat inspection, I beg to direct your attention to the desirability of providing a public abattoir, as soon as the many other important matters with which you are engaged will permit a consideration of the subject. Under existing conditions, animals can be quietly killed and the signs of disease done away with, or made irre recognizable, at any one of the 41 slaughterhouses at any time of the day or night. Anything like efficient inspection in this respect is therefore at present quite impossible.

Three seizures of unsound meat were effected during the year.

TRIPE DRESSING ESTABLISHMENTS.

These places number 17, and during the year were placed on a revised register. With some three or four exceptions they are all fairly suitable for the use to which they are put; they all possess a plentiful supply of clean water, and were kept fairly well-limewashed and cleansed.

OFFENSIVE TRADES, &c.

These include :—Knacker and bone-boiler, three tanners, one tallow-melter, three gutscrapers.

Complaints in regard to all these trades were received and personally investigated by myself, as well as by your inspectors. The knacker's premises were in consequence re-paved and drained; two gutscrapers were ordered to cease using unsuitable premises, and a third one, whom I found using the Mersey water to clean the skins, was required to provide pure water from the public mains.

WORKSHOPS.

During the last quarter of 1893, every workshop in the Borough was inspected with regard to the following points :—(a) trade (b) number of workers (c) number of gas jets (d) cubic capacity (e) means of heating (f) means of ventilation (g) closet accommodation (h) proximity to open drains, privies, stabling, &c. The facts were carefully tabulated and an excellent register of 110 workshops has been obtained. The reports were transmitted to the Inspector of Factories, and the result has been that Stockport has recently been honourably mentioned by the Chief Inspector of Factories, &c., as one of the few towns in which energetic action has been taken in this respect.

Your inspectors report that the workshops are for the most part well-lighted, and of sufficient cubic capacity for the workers employed therein, only seven being slightly overcrowded, allowing 250 cubic feet per worker and assuming that 3 gas burners count as one person, as recommended by Her Majesty's Chief Inspector of Factories. A point to which my attention has been drawn is the unsuitability of papered walls in most workshops, as being less well adapted for cleansing than those which are whitewashed or distempered. In the majority of cases the closet accommodation is of the common privy type, usually without separate provision for the sexes, and in 2 cases, insufficient in extent. In one instance a workshop was used also as a bedroom; another workshop which the owner immediately ceased to occupy when requested to do so, was in a loft over

a stable in the floor of which was a cesspool, the smell in the loft being very offensive. Nuisances from two very primitive urinals, from an uncovered privy-pit and from two untrapped drain openings were detected and remedied. The workshops were as a rule kept very fairly clean, notices to cleanse and limewash being necessary in seven cases only. The gravest defect and that which will be far the most difficult to remedy is in regard to ventilation. In the majority of cases the chimney-flue, window, and door, are the only structural arrangements in this respect, though one well-intentioned employer passed a 2-inch pipe through his ceiling into the roof-space, and another left a manhole open in the same position. To provide a constant supply of fresh air without creating cold and draught is of paramount importance from a hygienic point of view, but while the physical difficulties in doing so are very great, the inclinations of the workers are even a greater obstacle, for I have already stated that such windows and flues as do exist are carefully fastened or stopped up in most cases.

COMMON LODGING HOUSES.

There are 24 common Lodging Houses, registered to accommodate 745 persons nightly. I have repeatedly inspected these houses and am of opinion that only 4 of them are even reasonably fit for the purpose for which they are used. Four exceptionally bad ones were closed during the year, two upon the death of the licensee, and two which I reported to you as utterly unfit for human habitation. For continuing to receive lodgers in one of the latter the occupier was prosecuted and fined 10s. and costs. The lodging houses were inspected regularly at least twice a week, and during the smallpox outbreak were visited nightly for 17 weeks by your inspectors, accompanied occasionally by myself and frequently by another medical man who vaccinated or re-vaccinated over 70 of the inmates. 6 cases of actual smallpox were also detected by these inspections and at once removed.

A new model lodging house was opened in Union Street, is a credit to the town, and will not suffer by comparison with any but the very best houses of the kind which I have seen anywhere. Two modified slop-water closets are in use here, are strong and work well. Inside the vertical pipe leading from the seat to the drain is an inverted hollow cone with a 6-inch outlet below, and a flushing rim above. This cone is flushed at intervals by a "tipper" fixed in a metal box above the seat, and supplied by a drip-tap with clean water. The subjacent drain is flushed by a 10-gallon tipper served with *slop-water*, about 530 gallons of water being metered during the 24 hours at this house. An inspecting shaft and intercepting trap are provided, and though the former was removed a piece of slate which temporarily stopped the drain on the only occasion on which these closets have failed to work satisfactorily.

The facts are recorded in detail, because the question of satisfactory closet accommodation in such places has given rise to much discussion.

For receiving common lodgers in a house in Daw Bank, an unlicensed person was fined 20s. and costs.

HOUSES LET IN LODGINGS.

These are not yet registered, and there are no bye-laws for their regulation, but their number is considerable, and the matter is one for future consideration.

SMOKE NUISANCES.

Sixty observations were taken during the year. The time-limit in Stockport for dense black smoke is seven minutes in two consecutive hours, and this was exceeded in nine cases by periods varying from $1\frac{1}{2}$ to 19 minutes. Fines varying from costs to 20 shillings and costs were inflicted, which have little deterrent effect and practically make indulgence in the luxury of extensive air-pollution a petty cash transaction, which does not pay for the time spent by the inspectors in observing it.

THE CANAL.

The condition of the canal has given rise to occasional complaint, and in April a notice was served on the Railway Company to cleanse it. There are no registered canal boats. A few barges exist but they are not inhabited.

Contagious Diseases (Animals) Act.

In accordance with the directions of the Sanitary Committee the contents of an important circular issued by the Board of Agriculture in regard to the danger of handling carcasses of animals affected with Anthrax, were summarised by me in July, and placarded in the Market Place, Fair Ground, &c. The provisions of the Middlesex Pleuro-pneumonia Movement Order, November 1893, by the Board of Agriculture were similarly epitomized by me and advertised throughout the town. I also removed the brain and spinal cord of a dog, said to have been suffering from rabies, and sent them to Professor VICTOR HORSLEY, F.R.S., for bacteriological examination. Professor HORSLEY subsequently expressed an opinion that the dog had not suffered from rabies.

Sale of Food and Drugs Act.

81 samples were taken under this Act during the year, and submitted to the Public Analyst, particulars of which are as follow :—

Milk 26, condensed milk 2, butter 17, coffee 14, lard 7, flour 3, bread 1, paregoric 2, whisky 6, brandy 3, for which convictions were as follows :—

5 persons were convicted for adulteration of milk, the fines varying from 10s. and costs to 40s. and costs ; one case was withdrawn on payment of costs, while as regards the paregoric, the defendants in both cases paid a fine of £5 and costs rather than let the matter come into court.

2 persons were fined 40s. and costs each for selling margarine for butter.

A cautionary notice calling the attention of vendors of food, &c., to the provisions of the Public Health Act with respect to the sale of unsound food was widely distributed through the Borough during the summer months.

Magisterial Proceedings.

Offence.	Result.	Fine.			Remarks.
		£	s.	d.	
Emitting dense smoke from mill chimney. ...	Convicted.	1	0	0	Costs.
Do. do. do. ...	Do.	1	0	0	Do.
Do. do. do. ...	Do.	0	10	0	Do.
Do. do. do. ...	Do.	Costs.			
Do. do. do. ...	Do.	0	5	0	Do.
Do. do. do. ...	Do.	1	0	0	Do.
Do. do. do. ...	Do.	1	0	0	Do.
Do. do. do. ...	Do.	0	10	0	Do.
Do. do. do. ...	Do.	0	2	6	Do.
Do. do. do. ...	Do.	0	5	0	Do.
Selling adulterated milk ...	Do.	0	10	0	Do.
Do. do. do. ...	Do.	2	0	0	Do.
Do. do. do. ...	Do.	0	10	0	Do.
Do. do. do. ...	Do.	Costs.			
Do. do. do. ...	Do.	2	0	0	Do.
Do. do. do. ...	Do.	0	10	6	Do.
Unlawfully selling paregoric ...	Settled by paying	5	0	0	Do.
Do. do. do. ...	Do.	and Do.			Do.
Selling margarine for butter ...	Convicted.	2	0	0	Do.
Do. do. do. ...	Do.	and 10s.6d. Analyst's fee.			Do.
Exposing unsound meat for sale ...	Withdrawn.	Do.			
Do. do. do. ...	Dismissed.	Costs.			
Failing to notified a case of infectious disease ...	Convicted.	0	5	0	Do.
Allowing a person suffering from an infectious disease to be in a public street ...	Do.	0	5	0	Do.
Do. do. do. ...	Do.	Costs.			
Do. do. do. ...	Do.	0	5	0	Do.
Non-compliance with notice to abate nuisance within time allowed ...	Adjourned 14 days, then 3 day order.				
Do. do. do. ...	Adjourned for 7 days.	Costs			
Do. do. do. ...	7 day order.				
Do. do. do. ...	Adjourned for 14 days.	Costs.			
Do. do. do. ...	Convicted.	Costs.			
Do. do. do. ...	Adjourned for 14 days, then 7 day order.	Costs.			
Do. do. do. ...	Adjourned for 7 days.	Costs.			
Depositing ashes, &c., on public street	Convicted.	Costs.			
Allowing unregistered house to be occupied by lodgers.	Do.	0	10	0	Costs.
Do. do. do. ...	Do.	1	0	0	Costs

Lines of future action.

The Annual Report of the Medical Officer of Health is expected to "indicate directions for further consideration and action." These have been already discussed in detail, and it only remains for me to briefly summarize as follows, the various recommendations submitted for your consideration :—

(1). The conversion of the midden-privy to the water carriage system of disposal of refuse, and the abolition of tips within the town.

I have already recorded my firm belief that it would be difficult to over-estimate the danger to health resulting from the existing privies, which pollute the air and soil, and are hot-beds for the development of disease-germs. I am aware that this question in Stockport is a tremendous one to face, but, on the other hand, I am convinced that any other sources of ill health which may exist in your town, are comparatively small branches on the formidable trunk of insanitation constituted by the existing midden privies.

(2). The continuance and extension of your efforts to provide for the thorough cleansing and ventilation of the public sewers; and the removal, as soon as it can be afforded, of the existing defective flagged or bricked sewers.

(3). The improvement, where practicable, of the existing system of scavenging, both as regards method and frequency.

(4). The provision of additional hospital accommodation, to permit of the separate isolation of each of the more serious notifiable diseases.

(5). The provision of crèches, *if found practicable*, and the adoption of any other judicious and well-considered measure for the limitation of the present very heavy infant mortality.

(6). The gradual improvement of the Housing of the Working Classes by the continued enforcement of existing legislation in that respect, and as regards new property, by discouraging the erection of any further privies and continuing to require strict compliance with the building bye-laws.

Various other lines of sanitary progress might be indicated, *e.g.* the provision of a public abattoir, but being of secondary importance as compared with the foregoing recommendations, these matters will doubtless have, for the present, to stand aside.

CHARLES PORTER,

Medical Officer of Health.

November 1st, 1894.

TABLE OF DEATHS DURING THE YEAR 1893, IN THE URBAN SANITARY DISTRICT OF STOCKPORT, CLASSIFIED ACCORDING TO DISEASES, AGE, AND LOCALITIES.

[illegible]

TABLE (B.)

TABLE OF POPULATION, BIRTHS, AND OF NEW CASES OF INFECTIOUS SICKNESS, COMING TO THE KNOWLEDGE OF THE MEDICAL OFFICER OF HEALTH, DURING THE YEAR, 1893,
IN THE URBAN SANITARY DISTRICT OF STOCKPORT, CLASSIFIED ACCORDING TO DISEASES, AGES, AND LOCALITIES.

NAMES OF LOCALITIES adopted for the purpose of these Statistics; Public Institutions being shown as Separate Localities.	POPULATION AT ALL AGES.		Registered Births.	Aged under 5 or over 5.	New Cases of Sickness in each Locality coming to the knowledge of the Medical Officer of Health.										Number of such cases removed from the several localities for treatment in										TOTAL.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	Census 1891.	Estimated to middle of 1893.			Smallpox.	Scarlatina.	Diphtheria.	Membranous Croup.	FEVERS.				Typhoid.	Continued.	Puerperal.	Erysipelas.	TOTAL.	ISOLATION HOSPITAL.					WORKHOUSE HOSPITAL.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
									Enteric or Typhoid.	Continued.	Puerperal.	Erysipelas.						Smallpox.	Scarlatina.	Diphtheria.	Enteric or Typhoid.	Continued.	Erysipelas.	Scarlatina.		Enteric or Typhoid.	Continued.	Puerperal.	Erysipelas.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
(a)	(b)	(c)	(d)	(e)	1	2	3	4	5	6	7	8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

Removed to Hyde Isolation Hospital, 8 cases of smallpox from Stockport Workhouse

INDEX.

	PAGE.		PAGE.
Abattoir, Public, desirability of	64	Enteric fever	26-31
Area of Borough	10	Occurrences and deaths, 1881-1893,	27
Bakehouses	63	History of epidemic, 1893.	27-31
Baths	52	Influence of geological conformation	28
Bill of Mortality 1750-1800	5	Estimated population, 1893	10
Births and Birthrate	12	Factory Labour and Infant Mortality	18, 19
Birthplaces	8	Flushing Tanks for Sewers	56, 57
Brook-courses, brook-culverts	54	Food and Drugs Act, Sale of	66
Bronchitis, Pneumonia, and Pleurisy	45	Foreigners	8
Byelaws	60	Future Action, Lines of	68
Canal	66	Geological Features of District	5
Cellar Dwellings	52	Growth of Stockport, 1750-1890	5, 6
Cemetery	51	Hospital Accommodation, necessity for	
Census Returns 1891	7, 8, 9	increased	49
Civil and Ecclesiastical Parishes:	7	House Drainage	53
sex and age distribution of popula-		Houses in each Ward,	10
tion, 8 : Conditions as to marriage,	8	Houses let in Lodgings, tenements	66
birthplaces, &c.	8	Housing of the Working Classes	52
Cholera, preparations against	32	Illegitimate Infants, Mortality of	20
Coffins, sanitary	51	Industries	52
Common Lodging Houses	51	Infant Mortality, causes and	
Nightly inspection of	23	prevention of	14 to 20
Comparative Statistics of Stockport, and		Infant Deaths, 1889-1893, analyses of causes	16
similiar towns	12	Infant Insurance	20
Complaints by Public	63	Infectious Diseases Notification Act	21
Consumption, Pulmonary (Phthisis)	44	" " Prevention Act	21
Contagious Diseases (Animals) Act	66	" " Method of dealing with	51
Coroner's Certificates	14	Influenza	43
Cowsheds	63	Inquests	14
Creches (provision of)	19	Inspection, General, of District	61
Dairies	63	Intercepting Sewers	57
Deaths and Death-rate	12	Introductory Remarks	3
Diarrhoea	31	Isolation Hospital	
A cause of infant mortality	18	Site, distance from dwellings, cost,	
Relation to earth temperature	18, 31	income and expenditure 1888-1892,	
Relation to typhoid	32	description, staff, structural altera-	
Diphtheria	37	tions, &c.	46 to 49
History of prevalence in 1893.	38-43	Lamp Holes	55
Influence of geological conformation	39	Legal Proceedings	66 and 67
Disinfection	50	Lung Diseases	44
Disinfecting Apparatus		Manholes	55

	PAGE
Marriages and Marriage-rate	12
Measles, and question of Notification of	33-35
Meat Inspection	64
Meteorological Station	52
Milkshops	63
Milk-supply, infected,	29
Notifications of Infectious Diseases	21
Procedure on receipt of	51
Occupations of Males and Females,	
Census 1891	9
Offensive Trades	64
Paregoric, unlawful sale of	66
Physical Configuration of District	5
Pleurisy	45
Pneumonia	45
Population	10
Privy-middens, danger to health, from,	18, 28,
29, 30, 32, 38, 39, 40, 58, 59, 63, 68	
Prosecutions	67
Purification of sewage	58
Refuse disposal	58
Revision of Byelaws	60
Rivers	52
Sanitary Committee, Members of	2
Scarlet Fever	36
Introduced from circumjacent districts	36
Probably transmitted from	
Denver, Colorado	37
Scavenging	58
Schools	59
Closet accommodation, of	59
Foci of Diphtheria	39 &c.
,, Meas'es	34
Medical Inspection, of	51

	PAGE.
Sewerage System	54
Old Flagged Sewers	54. Brook courses
Modern and New Sewers	55. Intercept-
ing Sewers	57. Flushing
Ventilation	55 &c.
Shaft Ventilators	55
Slaughterhouses	63
Slop-closets	58 and 65
Smallpox	22
Separate Hospital Accommodation for,	49
Smoke Nuisances	66
Soothings Syrups, and Infant Mortality,	20
Statistics	6 to 14
Tenements	7 and 66
Tips	59
Tripe Dressers	64
Typhoid Fever, see Enteric	26
Typhus Fever	25
Uncertified Deaths	13
Vaccination	25
Ventilation of Workshops	65
Ventilation of Sewers	55, 57
Water Supply	29, 51
Wells, Shallow	52
Whitehill Hospital	49
Workshops, Special Inspection of	64
Zymotic Disease	21