[Report 1883] / Medical Officer of Health, Newcastle-upon-Tyne City & County.

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CITY AND COUNTY OF NEWCASTLE-UPON-TYNE.

REPORT

OF THE

MEDICAL OFFICER OF HEALTH

ON THE

Sanitary Condition of Newcastle-upon-Tyne,

WITH

TABULAR RETURNS

OF THE

SICKNESS AND MORTALITY

DURING THE YEAR 1883.

Newcastle-upon-Tyne:
BOAZMAN, DICKSON & Co., PRINTERS, 25, QUAYSIDE

1884.

TO MR ALD. THOMAS WILSON, J.P., CHAIRMAN OF THE SANITARY COMMITTEE OF THE CORPORATION OF NEWCASTLE-UPON-TYNE.

SIR

I beg to present herewith my eleventh Annual Report on the sanitary condition of Newcastle-upon-Tyne,–viz., that for the year 1883.

The somewhat extensive Report I have already submitted, by the instruction of the Committee, on the Increased Death-rate which prevailed during a considerable part of the year, will, I trust, be accepted as a reason for the late appearance of the present issue.

I have the honour to be,

Sir,

Your obedient Servant,

HENRY E. ARMSTRONG,

MEDICAL OFFICER OF HEALTH

Health Department, Town Hall,
Newcastle-upon-Tyne,
30th June, 1884

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CITY AND COUNTY OF NEWCASTLE UPON-TYNE.

REPORT 1883.

(A.)—GENERAL STATISTICS.

Births and Deaths (all causes.)

DURING the 52 weeks ended 29th December, 1883, 5,482 births and 3,792 deaths have been registered in the City. The births represent a rate of 36·7 and the deaths a rate of 25·4 per 1000 of a population of 149,464 at all ages, as estimated by the Registrar General to the middle of the year.

The following is a table of the recorded rates of mortality for the last sixteen years:—

RATES OF MORTALITY PER 1,000 POPULATION OF NEWCASTLE-UPON-TYNE.

A.D.	Rate per 1000.
1868	27·1
1869	27·2
1870	25·4
1871	32·2
1872	26·3
1873	30·1
1874	29·2
1875	26·1
1876	22·7
1877	22·3
1878	23·7
1879	23·5
1880	22·3
1881	21·7
1882	23·0
1883	25·4

A comparison of the rates of birth and death in the different Registration Sub-districts of the City during 1883 and the previous year is subjoined:—

RATES OF BIRTH AND DEATH PER 1,000 POPULATION (ESTIMATED).

REGISTRATION SUB-DISTRICTS.	BIRTH RATES.		DEATH RATES.	
	1882.	1883.	1882.	1883.
Westgate*	37·1	37·1	21·2	24·2
St. Andrew's†	26·5	29·7	18·6	21·6
St. Nicholas'‡	27·5	28·2	44·5	41·6
All Saints'	39·2	37·3	22·9	27·2
Byker	44·6	42·2	22·4	23·5
City	37·0	36·7	23·0	25·4

* Workhouse. † Small-pox Hospital. ‡ Infirmary and Fever Hospital.

Deaths from Miasmatic order of Zymotic Diseases.

The condition of the different Registration Sub-districts in regard of mortality from the Miasmatic order* of Zymotic diseases during last, as compared with the preceding year, is as follows :—

Sub-Districts.	Number of Deaths from Miasmatic Diseases.	
	1882.	1883.
Westgate	210	243
St. Andrews'	39	93
St. Nicholas'	91	64
All Saints'	88	115
Byker	152	182
City	580	697

The mortality from the "chief Zymotic diseases"† during successive seasons of the year, is as follows :—

Number of Deaths in 1883.

	Westgate.‡					St. Andrew's.					St. Nicholas'.					All Saints'.					Byker.				
	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
Small-pox	7	1	4	...	12	3	...	...	..	3	3	3	...	...	6	5	5	1	2	13	10	14	2	...	26
Measles	...	21	58	8	87	...	9	8	2	19	...	3	3	1	7	1	4	22	6	33	...	...	38	25	63
Scarlet Fever.....	6	4	6	26	42	1	...	7	2	10	1	1	1	8	11	2	...	4	22	28	7	11	4	11	33
Diphtheria	...	1	..	2	3	1	...	...	...	1	...	...	...	...	...	2	...	...	...	2	1	1	...	3	5
Whooping Cough	...	1	8	8	17	..	...	...	...	..	1	...	1	1	3	3	1	2	8	14	1	5	6	5	17
Typhus	2	2	...	...	4	1	...	...	...	1	5	4	...	1	10	3	...	...	1	4	3	1	1	...	5
Enteric (or Typhoid) Fever ...	9	5	2	5	21	1	...	1	...	2	3	...	1	...	4	2	2	...	1	5	5	..	2	3	10
Simple Contd. Fever	2	1	1	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	...	...	1	2
Diarrhœa	7	5	15	12	39	4	...	9	...	13	...	...	5	...	5	2	2	11	4	19	1	5	16	7	29

Measles.

By far the most fatal Zymotic disease has been Measles, from which 209 deaths are returned. Of these, 129 occurred in the third quarter of the year.

* See Appendix A, Table XI.

† Corrected by distribution of those occurring in the Fever and Small-pox Hospitals to the District from which each patient came.

‡ Exclusive of Benwell and Fenham.

DEATHS FROM BRONCHITIS AND PNEUMONIA.

Bronchitis and Pneumonia.

A.D. 1883.	Registration Sub-Districts.					City.	Number in previous Year (1882).
	Westgate (Workhouse)	St. Andrew's	St. Nicholas' (Infirmary)	All Saints'.	Byker.		
1st Quarter.....	50	14	10	42	14	130	115
2nd ,, ...	53	16	9	28	32	138	119
3rd ,, ...	46	9	10	22	30	117	56
4th ,, ...	47	9	11	21	37	125	106
Year.....	196	48	40	113	113	510	396
Number in previous Year (1882)	136	46	36	86	92	396	...

INFANT MORTALITY.

Infant Mortality.

The number of Infants dying before the completion of the first year of life is 919, as compared with 914, 820, and 927 respectively in 1882, 1881, and 1880.

	No. 1. Deaths of Children under 1 Year of Age.		No. 2. Rates per cent. of Deaths under 1 Year to Births Registered.		No. 3. Death Rates of Children under 1 year of age per 1,000 estimated population at all ages.	
	1882.	1882.	1882.	1883.	1882.	1883.
Westgate...	360	369	15·5	15·7	5·8	5·8
St. Andrew's	86	84	17·0	14·7	4·5	4·4
St. Nicholas'	65	67	23·3	23·5	6·5	6·6
All Saints'	176	173	18·2	18·6	7·1	6·9
Byker	227	226	16·2	16·8	7·2	7·1
City	914	919	16·7	16·8	6·2	6·1

The following are the most prominent factors of the infant mortality:—

	Deaths.	
	A.D. 1882.	A.D. 1883.
Measles	3	30
Diarrhœa	93	62
Tabes Mesenterica	32	30
Convulsions	122	106
Bronchitis	75	90
Pneumonia	19	38
Premature Birth	67	81
Teething	24	28
Atrophy and Debility	225	205
Total	660	670

Uncertified Deaths,

Uncertified Deaths.

That is to say, deaths registered without any proper medical certificate having been given or inquest held, have contributed 134 cases to the general mortality, as compared with 123 during the previous year. (See Appendix A, Table X.)

Marriages.

Marriages.

During the year ending March 31st, 1883, the number of marriages registered in Newcastle-upon-Tyne* was 1872, as compared with 1428 in the previous twelve months, and 1717 in the year before that.

Cases of Infectious Disease Notified.

Notification of Infectious Disease.

During the year under report, a total of 2,032 cases of Infectious Disease have been notified to the Medical Officer of Health by medical practitioners, under the Newcastle-upon-Tyne Improvement Act, 1882, including the following:—

	Cases Notified.
Small-pox	493
Typhus	90
Enteric Fever	216
Simple Continued Fever	45
Puerperal Fever	7
Scarlet Fever	1,152
Diphtheria	29
	2,032

The following Tables shew the monthly returns of the four most prevalent of the diseases above-named in the respective Wards of the City.†

Small-pox in Newcastle-upon-Tyne.

Small-pox in different Parishes &c., during successive months.

NUMBER OF CASES KNOWN TO THE HEALTH DEPARTMENT.									
A.D. 1883.	Elswick.	Westgate.	St. Andrew's.	St. John's.	St. Nicholas'.	All Saints'.	Jesmond.	Byker.	Total.
January.....	7	22	12	14	2	5	1	22	85
February	15	12	4	2	2	9	...	46	90
March	9	1	1	1	...	14	...	33	59
April	3	1	2	4	2	12	2	42	68
May	5	2	2	2	...	17	...	48	76
June	7	6	3	1	...	17	4	27	65
July	4	6	...	...	...	5	5	7	27
August	2	5	1	...	...	...	3	4	15
September.....	1	1	...	...	...	...	...	1	3
October.....	...	...	...	..	...	1	...	1	2
November.....	...	...	2	...	...	...	..	...	2
December.....	...	...	...	...	..	1	...	...	1
Total.....	53	56	27	24	6	81	15	231	493

* Superintendent Registrars district, which includes the Municipal area and the Townships of Benwell and Fenham.

† The discrepancy between the totals in the Tables of Typhus, Enteric, and Scarlet Fevers, and the numbers in the above return, are due to double notification of the same case, error in notification, cases not under medical treatment, &c.

Typhus Fever in Newcastle-upon-Tyne.

Typhus in different Parishes during successive months.

NUMBER OF CASES KNOWN TO THE HEALTH DEPARTMENT.									
A.D. 1883.	Elswick.	Westgate.	St. Andrew's.	St. John's.	St. Nicholas'.	All Saints'.	Jesmond.	Byker.	Total.
January	1	...	1	1	1	12	...	4	20
February	1	2	...	2	3	6	1	3	18
March	1	...	1	9	7	2	...	...	20
April	...	...	...	4	3	1	...	...	8
May	..	...	...	1	4	1	1	2	9
June	1	4	...	...	...	1	1	...	7
July	...	2	...	...	...	...	1	1	4
August	...	...	...	...	...	...	...	2	2
September.....	...	...	..	...	...	4	...	...	4
October	1	...	...	1	...	...	...	...	2
November.....	...	...	...	..	...	1	...	...	1
December	...	..	...	...	...	...	...	1	1
Total	5	8	2	18	18	28	4	13	96

Enteric Fever in Newcastle-upon-Tyne.

Enteric Fever, in different Parishes during successive months.

NUMBER OF CASES KNOWN TO THE HEALTH DEPARTMENT.									
A.D. 1883.	Elswick.	Westgate.	St. Andrew's.	St. John's.	St. Nicholas'.	All Saints'.	Jesmond.	Byker.	Total.
January	9	5	3	1	1	1	...	15	35
February	5	3	1	...	1	3	...	8	21
March	8	6	...	...	...	2	...	4	20
April	6	1	..	...	...	...	...	1	8
May	4	2	...	...	1	5	...	2	14
June	6	1	...	...	...	2	...	1	10
July	1	2	2	...	...	...	...	1	6
August	3	3	3	...	1	6	...	...	16
September	2	1	2	1	1	...	...	4	11
October	4	2	4	...	1	6	2	3	22
November	3	3	2	1	1	8	...	4	22
December	7	9	1	...	...	3	...	7	27
Total	58	38	18	3	7	36	2	50	212

Scarlet Fever in different Parishes during successive months.

SCARLET FEVER IN NEWCASTLE-UPON-TYNE.

NUMBER OF CASES KNOWN TO THE HEALTH DEPARTMENT.									
A.D. 1883.	Elswick.	Westgate.	St. Andrew's.	St. John's.	St. Nicholas'.	All Saints'.	Jesmond.	Byker.	Total.
January	18	8	8	4	1	13	3	19	74
February	14	12	4	...	1	11	3	26	71
March	18	14	...	...	...	6	2	15	55
April	12	10	2	...	1	7	...	25	57
May	8	6	8	5	8	7	10	28	80
June	18	9	14	2	...	14	5	14	76
July	8	17	8	3	...	2	2	5	45
August	8	9	23	2	1	21	12	6	82
September	7	15	18	...	...	20	7	4	71
October	19	34	12	...	1	40	15	9	130
November	67	49	25	5	1	54	3	29	233
December	43	22	8	...	7	60	17	16	173
Total	240	205	130	21	21	255	79	196	1147

The general mortality of each of the four diseases above named, calculated on deaths returned and cases notified during the same period* is :—

Small Pox	12·2	per cent.
Typhus	24·8	,, ,,
Enteric Fever	20·0	,, ,,
Scarlet Fever	10·8	,, ,,

Infectious Disease Inquiry.

INFECTIOUS DISEASE INQUIRY.

The notification of infectious diseases has brought to the Health Department a large influx of work and additional responsibility. The investigation of, and dealing with, upwards of two thousand cases of disease in households of all classes without giving offence to the householders, is a work necessitating a large amount of patience and discretion, which has not been wanting on the part of the special inspectors engaged on this important duty. So far as can be judged by a short experience it is believed that the "Notification Clauses" of the Newcastle-upon-Tyne Improvement Act, 1882, are working, and likely to work, smoothly and with satisfaction to the inhabitants.

On the receipt of every notification of a case of infectious disease the action taken by the Department is as follows :—

Action of the Health Department.

(1). A special inspector attends at the infected house without delay and makes a careful and exhaustive inquiry into the circumstances, filling up on a printed form† details relating to all the probable channels

* 52 weeks ended 29th December, 1883.

† Copy of which was given in the "Report on the recently Increased Death-rate of the City." issued in December, 1883.

by which infection may have been received or is likely to be propagated, the sanitary condition of the premises, water and milk supplies, &c. All defects noted receive attention.

(2). The removal to Hospital of suitable cases is recommended, and where agreed to by those concerned, is effected. Printed advice and instructions as to the best means of preventing the spread of infection are left at the house in every instance, and where requisite, disinfectants are supplied gratis.

(3). A printed form of certificate stating that the infected premises and articles are ready for final disinfection is also left with the householder for the signature of the Medical Attendant on the termination of the case. This certificate when duly signed is forwarded to the Medical Officer of Health, after which the Inspector sees to the final disinfection. After every case of Fever or Small-pox the bedding is removed to the Disinfecting Station, where it is purified and returned without charge to the owner.

Cases illustrating how Infection is spread.

In the course of the inquiry referred to numerous illustrations of the various agencies by which infection is likely to be propagated have come under observation during the year, and in several instances the actual spread of disease has been traced to such causes.

The following is a return of some of the more noteworthy :—

NEWCASTLE-UPON-TYNE INFECTIOUS DISEASE INQUIRY.—1883.

CHARACTER OF PREMISES, &c.	No. of cases of Infectious Disease.	REMAKKS.
Shops (chiefly small) for sale of Provisions, Green-Groceries, &c.	12	In five of these the sick-room opened directly into the shop; one room was used as shop, living-room, and sick-room; in one, no precautions whatever were being taken to prevent spread of infection.
Public Mangle-house ...	1	
Hosiery Shop ...	3	
Laundry	2	
Public-house	1	Entrance to sick-room through bar.
Dairy	2	In one of these the infected premises were over a pawnbroker's shop.
Travelling Draper's House	6	
Barber's Shop	1	Barber, whilst suffering from Small-pox, shaved customers.
Match-box Maker's ...	1	Match-boxes made on infected premises.
Marine-store Shop ...	1	Wife of patient visits private houses to collect refuse and waste material.

In addition to the above the following illustrations of how infection may be spread have occured :

A girl was found to have attended at a large elementary school on the seventh day of an attack of Scarlet Fever.

Two persons whilst suffering from Small-pox walked on the public streets, and one was a steamboat passenger.

A fatal case of Small-pox was concealed. The body was buried without medical certificate given or inquest held.

In a case of Small-pox, infection was traced to the funeral of a previous case of the same disease, and several others resulted from it.

One convalescent after Small-pox returned to work whilst infected and without authority.

Means of Isolation defective.

The most striking fact disclosed in the Infectious Diseases Inquiry is the generally imperfect character of the separation made between the sick and the healthy. In even large private houses this separation consists for the most part merely of the removal of the patient to a room on the top story; the doorway is hung with the much relied on "carbolic sheet," which, though useful whilst kept saturated with disinfectant and thoroughly closing the aperture, is not very efficacious when, as frequently happens, it is too small, or is allowed to get dry, or is hooked back, or when the mother of the patient after being for a time at the sick bedside, goes to other parts of the house without change of dress; or where the uninfected children are allowed to enter the the sick-room. Sometimes the apparently healthy members of the infected household are sent away—say to the seaside—where some of them occasionally develop the disease latent at the time of their leaving home. The inconvenience of keeping up two establishments not unfrequently leads to the return home of the outsiders before infection is gone. In one family several children after having been sent to the seaside for a few weeks on account of Scarlet Fever at home, were brought back to Newcastle in order that they might attend school as usual, and an unoccupied house in the street next that in which their home stood was taken for them. It happened that the back doors of the two houses were near together and intercourse was kept up between the *disjecta membra* of the household, with, as might be expected, the result that before long they all became infected, fell ill, and had to be removed to the parental roof before the first case was recovered.

If this holds in middle class houses, what is to be expected in tenemented dwellings of one, two, or three rooms each, of which there are several on the same stair and scores in the same street? Refer to the disease maps appended to this Report which shew that it is precisely in these tenemented-house districts that Scarlet Fever and Small-pox have been most prevalent during the year, *e.g.*, *Scarlet Fever* in Scotswood Road, West George Street, Buckingham Street and the district to its north, Shieldfield, the area between Sandgate and the east end of New Bridge Street, Jesmond Vale, Byker; and *Small-pox* in Byker (old and new).

One inference plainly deducible from the foregoing is that the greater prevalence and tendency to spread of the diseases in question in the districts named is due to the fact that for the working class population no such thing as home isolation of the infected sick is possible.

Ought this to be allowed? Have not the public the right to protection from the danger to which they are exposed from such a state of things? Should not those authorities who provide accommodation for the fever stricken, have power to insist on their removal from such unhealthy areas, for the good of themselves, their relatives, neighbours, and the public in general?

Owing to the spread of infectious diseases, especially Scarlet Fever, a re-issue was made of the circular addressed to Principals of Schools, of which a copy was given in the Annual Report for 1880, page 71.

FEVER AND SMALL-POX HOSPITALS.

Fever and Small-pox Hospitals.

384 Patients have been admitted to the Fever and Small-pox Hospitals, viz:—

259	suffering	from	Small-pox*.
76	„	„	Typhus.
30	„	„	Enteric Fever.
13	„	„	Scarlet Fever.
3	„	„	Simple Continued Fever.
1	„	„	Roscola.
2	„	„	Other diseases.

For other details as to the above see Appendix A (Table XIII).

Defective accommodation for Scarlet Fever cases.

As usual, Scarlet Fever, the most prevalent Zymotic disease of the year, has, owing chiefly to the defective accommodation and structural arrangements of the old Hospital, received very imperfect attention in regard of isolation, as shewn by the small number of cases admitted. In the new Hospital, to be presently referred to, special wards for the admission of cases of Scarlet Fever will be provided.

Owing to the defective accommodation of the Fever Hospital at Bath Lane, two convalescents before discharge from hospital caught infection of other disease.

Among the occurences of the year are to be noted the following:—

New Sanitary Hospital.

(1.) The approval by the Town Council of a design for a New Sanitary Hospital for Newcastle-upon-Tyne,† by Mr. A. B. Gibson, Architect, to be built of brick, and to be erected on a site of ten acres of ground near Heaton.

Abolition of Charge for Maintenance of Paupers.

(2.) Agreement between the Sanitary Committee of the Corporation and the Poor Law Authority that in consideration of a fixed annual payment by the latter, all pauper cases of infectious disease admitted to the Fever or Small-pox Hospitals are to be treated free of further charge.

* For state of these as regards Vaccination see Appendix B, page 45.

† A copy of the memorandum of requirements in accordance with which the design was prepared is given in Appendix C, page 46.

Additional Disinfecting Apparatus.

(3.) The purchase of a Washington Lyon's Steam Disinfecting Apparatus to be erected in the grounds of the new Sanitary Hospital, the Ransome's Gas Disinfecting Apparatus having proved unequal to the disinfecting of the largely increased amount of bedding and other articles removed to the Station since the notification of Infectious Diseases came into operation,

New Ambulance.

(4.) The purchase of a new Hospital Ambulance, built by Messrs. Atkinson and Philipson, of Newcastle.

BURIAL OF CORPSES.

Burials under Local Act of 1882.

Under the 47th Section of the Newcastle-upon-Tyne Improvement Act, 1882, Orders of Justice have been obtained during the past year as follows:

For Burial of Corpses from rooms in which persons live or sleep	9
For Burial of Infected Corpses from Fever or Small-pox Hospital	9
For Removal of Corpses to Mortuary and subsequent Burial	2

GENERAL WORK OF THE HEALTH DEPARTMENT.

General Work of the Department

(a.)—Nuisance Removal.—5,982 cases of nuisance have been dealt with by the Inspectors of the Department during the year. This

Nuisances.

number is more than double that of the previous year, and more than 40 per cent. above the average of the last five preceding years. The increase is partly due to the strengthening of the permanent staff by the appointment of two Special Inspectors who have relieved the District Inspectors of all duty in connection with infectious disease. A large portion of the nuisance work referred to also consists of defects detected in the house-to-house inspection carried on until the end of the year entirely by the District Inspectors. Acknowledgement is also due to the City Engineer for much valuable assistance in reporting defects noted by officials in his Department. A detailed list of the nuisances in question is given in Appendix A, Table XVII.

House Inspection.

(b.)—The House-to-House Inspection referred to was begun in February. Falling, as it at first did, on officers who had other duties to attend to, progress was naturally slow. In December twelve additional men were engaged as House-to-house Inspectors, since when the work has advanced actively. The inspection of the lower class property was completed in May of the present year; that of the better class of dwellings is now going on.*

A large number of private residences of good class have been specially examined by the Chief Inspector, who has prepared sketch plans shewing the defective sanitary arrangements noted and the alterations made.† These sketches are preserved for reference,

* A copy of the form filled in at the inspection of houses was given in the Annual Report for 1882 (Appendix H.)

† It was intended to have published some of the sketches in the present report (as in 1882) but owing to want of space they are of necessity omitted.

Infectious Disease Inquiry.

(c.)—Infectious Disease Inquiry and Disinfection.—2,045 cases of infectious disease have been inquired into by the Special Inspectors and the houses or rooms connected therewith disinfected. The bedding and other infected articles have been removed to the Disinfecting Station, and after purification they have been returned to the owners. (For list see Appendix A, Tables XV and XVI.)

Food Inspection.

(d.)—Food Inspection.—The inspection of *Fish* at the Fish Market in the Close continues to form one of the duties of Chief Inspector Clarke, whose report is given in Appendix A, Table XIV*a*. The amount of fish delivered at the Close Market both by boat and rail, is greater than hitherto. The report of Inspector Hedley on suspected and unwholesome *Butchers' Meat* or other flesh examined during the year, is given in Appendix A, Table XIV*b*., which shews an increase in the amount of suspected and condemned meat over that of the previous year.

Dairies, &c

(e.)—Inspection of Dairies and Cowsheds.—Inspector Hedley reports that upwards of 2,000 inspections of cowhouses have been made during the year. A considerable number of improvements have been effected in regard of drainage, ventilation, &c., on verbal notice. In two instances where formal notices were served to improve the ventilation, lighting, and drainage of premises, one of the occupiers complied; the other left the premises, which are now closed. The number of cowhouses in closely populated and otherwise unsuitable localities is large.

Much of the time of the Inspectors under the Dairies Order has been occupied with Foot and Mouth Disease of Cattle, that disorder having broken out in sixteen cowsheds, affecting ninety-nine animals, during the first quarter of the year. Strict instructions were given, and supervision was made, to prevent the use of the milk of the affected animals for human food.

Five applications have been made to begin to occupy old buildings as cowsheds, of which one was granted conditionally, and four were declined by the Sanitary Committee after hearing the reports of their officers thereon.

One new building has been occupied as a cowshed, plans having been submitted to and passed by the Committee.

Infectious Disease a Dairies.

Four outbreaks of infectious disease have been reported in the families of dairymen, viz., two of Scarlet Fever and one each of Enteric Fever, and Small-pox. On report of the cases they were at once attended to, and instructions were given to sever all communication between the milk and the infected persons and premises. No spread of disease by means of milk is known to have occurred.

Slaughter Houses.

(f.)—Inspection of Slaughter Houses and Triperies.—The inspection of slaughter houses and triperies is of necessity carried out somewhat irregularly, from the premises being so widely scattered over

the City, and the respective occupiers generally living at a distance from them. A systematic visitation of the slaughter houses in any particular district on a given day would take up more time than is at the disposal of the Inspectors, who have other duties to attend to.

The three principal groups of slaughter houses are visited weekly, and the others as occasion allows. Many of the outlying slaughter houses are in defective sanitary condition, either as regards situation, drainage, material of building, structural arrangements, &c.

There are 146 licensed houses (134 slaughter houses and 12 triperies), of which 107 are licensed for a term of one year, and 39 (on account of special defects), for six months only. The latter are merely tolerated pending the provision or otherwise of a Public Abattoir, which is much required. 7 Slaughter houses are unoccupied; 6 licenses have been allowed to lapse; 4 applications to the Sanitary Committee have been made to license existing buildings as slaughter houses or triperies, all of which have been declined.

Water Samples.

(g.)—Collections of Well Waters.—Samples of water from five wells have been drawn and submitted to the Public Analyst for examination during the year. None of these were reported on as being unfit for drinking.

Before concluding this section of the Report a word of commendation is due to the Inspectors and other Sub-officers of the Health Department as at present constituted, for the manner in which they have performed their respective duties. As the returns shew, their work during the year has been unusually heavy. It is but just to state that it has been well done.

House Building.

HOUSES BUILT DURING THE YEAR 1883.

The following return of houses built during the year under report is supplied through the courtesy of the City Engineer:—

Newcastle-upon-Tyne.	Houses Self-contained.	Houses of Two Flats each.
Elswick Township...	44	... 114
Westgate Township	10	... 21
Byker Township	32	... 108
Jesmond Township	35	... nil.
Heaton Township...	13	... 44
St. Andrew's Parish	2	... 9
St. John's Parish	nil.	... nil.
St. Nicholas' Parish	nil.	... nil.
All Saints' Parish	nil.	... nil.
	136	296 (for 592 families).

New accommodation has thus been provided for 728 families, or, at the rate of 5 persons to a family, 3,640 persons.

HENRY E. ARMSTRONG.

CITY & COUNTY OF NEWCASTLE-UPON-TYNE, 1883.

APPENDIX A.

TABLE I.

POPULATION (ESTIMATED BY THE REGISTRAR-GENERAL TO THE MIDDLE OF THE YEAR)—149,464.

Registration Sub-Districts.	Births Registered in 52 Weeks ended 29th December, 1883.					Deaths Registered in 52 Weeks ended 29th December, 1883.		
	Male.		Female.		Total.	Male.	Female.	Total.
	Legitimate.	Illegitimate.	Legitimate.	Illegitimate.				
Westgate	1,149	57	1,102	43	2,351	810	723	1,533
St. Andrew's	260	12	282	15	569	209	206	415
St. Nicholas'	145	5	130	5	285	274	146	420
All Saints'	442	24	437	28	931	343	333	676
Byker	661	21	636	28	1,346	389	359	748
Total	2,657	119	2,587	119	5,482	2,025	1,767	3,792

The Births represent a rate of 36·7, and the Deaths a rate of 25·4 per 1,000 estimated population. The increase of Births over Deaths is 1,690.

TABLE II.

ANNUAL *DEATH-RATE* PER 1,000 LIVING IN NEWCASTLE FOR THE PAST FIVE YEARS, COMPARED WITH THE *AVERAGE RATE* IN THE LARGE TOWNS OF THE UNITED KINGDOM.

	1879.		1880.		1881.		1882.		1883.	
	Annual Average in 23 Towns.	Annual Rate in Newcastle.	Annual Average in 20 Towns.	Annual Rate in Newcastle.	Annual Average in 20 Towns.	Annual Rate in Newcastle.	Annual Average in 28 Towns.	Annual Rate in Newcastle.	Annual Average in 28 Towns.	Annual Rate in Newcastle.
1st Quarter	27·8	25·3	25·5	23·1	23·8	21·7	24·3	22·8	23·8	24·7
2nd "	22·7	25·3	20·4	21·8	20·5	21·8	20·9	21·0	21·5	23·3
3rd "	18·4	20·8	23·2	22·7	20·5	21·4	20·6	24·4	19·9	27·0
4th "	24·6	22·7	21·5	20·8	22·1	21·0	22·9	23·9	21·2	26·6
Annual Rate	23·4	23·5	22·7	22·3	21·7	21·7	22·3	23·0	21·6	25·4

TABLE III.

RATES OF DEATH IN THE DIFFERENT CLASSES OF DISEASES PER 1,000 POPULATION IN THE CITY, AND IN EACH REGISTRATION SUB-DISTRICT.

Registration Sub-Districts.	Westgate (V.W.)* Excluding Benwell and Fenham.	St. Andrew's.	St. Nicholas' (H.)†	All Saints'.	Byker.	City.
Population (estimated to middle of 1883 ... ...)	63,322	19,188	10,104	24,980	31,870	149,464
CLASS.						
1. Zymotic ‡	4·5	3·2	5·9	5·7	6·8	5·1
2. Constitutional	4·3	3·3	6·8	3·9	3·5	4·1
3. Local	9·5	8·2	16·6	11·7	8·3	9·9
4. Developmental	4·0	3·5	3·0	4·1	3·9	3·9
5. Violent Deaths (classed)...	0·6	0·4	5·0	0·4	0·4	0·8
6. ,, (not classed)	0·05	0·00	0·3	0·2	0·1	0.1
Sudden Deaths (causes unascertained, causes not specified, or ill-defined)	1·2	1·1	3·0	1·6	1·2	1·4
	24·15	19·7	40·7	27·6	24·2	25·3

* Workhouse and Vagrant Ward.

† Hospital.

‡ The deaths in the Zymotic Class are corrected by distribution of those occurring in the Fever and Small-pox Hospitals to the Sub-Districts from which each came.

TABLE IV.

DEATHS FROM ALL CAUSES IN EACH SUB-DISTRICT.

Order.	Westgate. Number of Deaths.		St. Andr'ws. Number of Deaths.		St.* Nicholas. Number of Deaths.		All Saints'. Number of Deaths.		Byker. Number of Deaths.		Totals. Deaths from all causes.		Totals. Percentage of Total Deaths in each of the different orders to total deaths from all causes.	
Class I. Zymotic Diseases.														
1. Miasmatic	243		93		64		115		182		697		18·4	
2. Enthetic	8		1		2		9		4		24		0·6	
3. Dietic	21		3		4		6		4		38		1·0	
4. Parasitic	6		...		...		...		1		7		0·2	
		278		97		70		130		191		766		20·2
Class II. Constitutional Diseases.														
1. Diathetic	34		7		19		7		16		83		2·2	
2. Tubercular	239		56		50		90		97		532		14·0	
		273		63		69		97		113		615		16·2
Class III. Local Diseases. Diseases of—														
1. Nervous System ..	195		55		36		91		64		441		11·6	
2. Organs of Circulation	70		20		32		41		30		193		5·0	
3. Respiratory Organs ...	245		57		51		126		125		604		15·9	
4. Digestive ,, ...	49		13		14		20		18		114		3·0	
5. Urinary ,, ..	34		10		28		11		18		101		2·7	
6. Organs of Generation	2		1		3		1		4		11		0·3	
7. ,, Locomotion	6		...		3		...		2		11		0·3	
8. Integumentary System	2		2		1		2		3		10		0·3	
		603		158		168		292		264		1,485		39·2
Class IV. Developmental Diseases Diseases of—														
1. Children	74		12		6		16		36		144		3·9	
2. Adults	10		1		1		11		7		30		0·8	
3. Old People	89		24		5		20		18		156		4·1	
4. Nutrition	86		31		18		56		64		255		6·7	
		259		68		30		103		125		585		15·4
Class V. Violent Deaths.														
1. Accident or Negligence	33		7		45		5		11		101		2·7	
2. Homicide	...		1		1		...		...		2		0·05	
3. Suicide	6		...		4		4		1		15		0·4	
4. Executions	...		...		...		...		...		...		0·00	
		39		8		50		9		12		118		3·2
Violent Deaths (not classed)	3		...		3		5		4		15		0·4	
Sudden Deaths (causes unascertained)	7		3		7		8		5		30		0·8	
Causes not specified, or ill-defined)	71		18		23		32		34		178		4·7	
		81		21		33		45		43		223		5·9
Totals		1,533		415		420		676		748		3,792		

* The number of deaths in St. Nicholas' Sub-District is increased by 167 deaths in the Infirmary, and 62 in the Fever and Small-pox Hospitals; 91 of the former came to that Institution from beyond the City.

TABLE V.—AGES AT DEATH.

Periods.	Westgate.	St. Andrew's.	St. Nicholas'.	All Saints'	Byker.	Total in City.
Under 1 Year	369	84	67	173	226	919
1 Year and Under 5 Years	284	76	35	173	193	761
5 Years and „ 20 „	124	41	52	48	62	327
20 „ „ 40 „	197	60	104	74	94	529
40 „ „ 60 „	248	61	106	93	81	589
60 „ „ 80 „	252	73	52	102	66	545
80 „ and upwards	59	20	4	13	26	122
Total (all ages) dying during 52 weeks ended 29th December, 1883	1,533	415	420	676	748	3,792

TABLE VI.

WEEKLY MEAN NUMBERS OF DEATHS AT SEVEN ÆTAL PERIODS.

Periods.	Westgate.	St. Andrew's.	St. Nicholas'.	All Saints'	Byker.	Total in City.
Under 1 Year	7·0	1·6	1·3	3·3	4·3	17·7
1 Year and under 5 Years	5·5	1·5	0·7	3·3	3·7	14·6
5 Years and „ 20 „	2·4	0·8	1·0	0·9	1·2	6·3
20 „ „ 40 „	3·8	1·2	2·0	1·4	1·8	10·2
40 „ „ 60 „	4·8	1·2	2·0	1·8	1·6	11·3
60 „ „ 80 „	4·8	1·4	1·0	2·0	1·3	10·5
80 „ and upwards	1·1	0·4	0·08	0·2	0·5	2·3
Totals	29·4	8·1	8·08	12·9	14·4	72·9
Percentage of Deaths under 1 Year, to total Deaths in Sub-Districts, &c.	24·0	20·2	16·0	25·6	30·2	24·2

TABLE VII.

BIRTHS AND DEATHS IN THE DIFFERENT QUARTERS IN YEARS 1880, 1881, 1882, 1883.

	Births.				Deaths.			
	1880.	1881.	1882.	1883.	1880.	1881.	1882.	1883.
First Quarter	1,378	1,392	1,347	1,446	862	825	843	919
Second „	1,462	1,342	1,328	1,342	848	790	775	869
Third „	1,322	1,309	1,435	1,315	849	781	902	1,009
Fourth „	1,273	1,290	1,365	1,379	776	768	883	995
Totals.....	5,435	5,333	5,475	5,482	3,335	3,164	3,403	3,792

TABLE VIII.

DEATHS OF CHILDREN UNDER 1 YEAR, AND PERSONS OVER 60 YEARS, IN 1880, 1881, 1882, 1883.

	Number of Deaths							
	Under 1 Year of Age.				Over 60 Years.			
	1880.	1881.	1882.	1883.	1880.	1881.	1882.	1883.
1st Quarter	223	166	190	215	166	189	167	191
2nd „	225	182	210	198	150	184	141	141
3rd „	294	273	320	277	122	147	126	154
4th „	185	199	194	229	174	148	188	181
Totals	927	820	914	919	612	668	622	667

TABLE IX.

DEATHS OF CHILDREN UNDER 1 YEAR OF AGE DURING THE 52 WEEKS ENDED 29TH DECEMBER, 1883.

CLASS.	CAUSE OF DEATH.	Westgate.	St. Andrew's.	St. Nicholas'.	All Saints'.	Byker.	Total in City.
I.—Zymotic Diseases.	Order 1.						
	Small-pox	1	3	...	...	2	6
	Measles	16	1	2	5	6	30
	Scarlet Fever (Scarlatina)	2	...	1	...	4	7
	Quinsy	...	...	1	...	...	1
	Croup	2	...	1	...	2	5
	Whooping Cough	8	...	2	2	7	19
	Erysipelas	1	...	1	...	1	3
	Diarrhœa	20	8	4	11	19	62
	Other *Zymotic* Diseases	...	...	...	...	2	2
	Order 2.						
	Syphilis	6	1	1	8	4	20
	Order 3.						
	Privation	3	3	2	3	3	14
	Want of Breast Milk	6	...	...	1	...	7
	Order 4.						
	Thrush	6	...	...	...	1	7
II.—Constitutional Diseases.	Order 2.						
	Scrofula	11	2	2	3	3	21
	Tabes Mesenterica	15	...	2	6	7	30
	Hydrocephalus	6	1	...	1	...	8
	Carried forward	103	19	19	40	61	242

TABLE IX.—Continued.

DEATHS OF CHILDREN UNDER ONE YEAR OF AGE DURING THE 52 WEEKS ENDED 29th DECEMBER, 1883.

CLASS.	CAUSE OF DEATH.	Westgate.	St Andrew's.	St. Nicholas'.	All Saints'.	Byker.	Total in City.
	Brought forward	103	19	19	40	61	242
III.—Local Diseases.	Order 1.						
	Convulsions	42	12	8	28	16	106
	Brain Disease, etc.	6	3	2	5	4	20
	Order 3.						
	Laryngitis	2	...	...	...	...	2
	Bronchitis	29	7	9	22	23	90
	Pneumonia	17	3	...	6	12	38
	Lung Diseases, etc.	4	...	2	...	3	9
	Order 4.						
	Gastritis	2	...	...	..	...	2
	Enteritis	2	2	...	...	1	5
	Peritonitis	...	...	...	1	...	1
	Intussusception	1	...	...	...	...	1
	Stomach Disease, etc.	3	...	...	..	...	3
	Jaundice	...	...	...	1	1	2
	Liver Disease, etc.	..	1	...	...	...	1
	Order 5.						
	Nephritis	1	...	...	...	..	1
	Order 8.						
	Skin Disease, etc.	...	1	...	...	1	2
IV.—Developmental Diseases.	Order 1.						
	Premature Birth	42	5	5	8	21	81
	Cyanosis	1	1	...	...	...	2
	Spina Bifida	2	...	...	...	1	3
	Other Malformations	1	1	...	...	...	2
	Teething	10	3	1	5	9	28
	Order 4.						
	Atrophy and Debility	67	23	14	43	58	205
V.—Violent Deaths, &c.	Order 1.—(Accident or Negligence.)						
	Fractures and Contusions	1	...	...	...	...	1
	Burns and Scalds	...	1	...	...	...	1
	Suffocation	5	1	...	...	2	8
	Otherwise	1	...	1	...	...	2
	Order 4.						
	Violent Deaths (not classed)	1	...	...	...	...	1
	Sudden Deaths (cause unascertained) ...	1	...	1	5	3	10
	Causes not specified or ill-defined... ...	25	1	5	9	10	50
	Total	369	84	67	173	226	919*

* Representing a rate of 6·1 per 1,000 per annum.

TABLE X.

UNCERTIFIED DEATHS IN EACH SUB-DISTRICT DURING THE 52 WEEKS ENDED 29TH DECEMBER, 1883.

ALLEGED CAUSE OF DEATH.	Westgate			St Andrew's			St Nicholas'			All Saints'			Byker			Total		
	Under 1 Year	1 Year and Under 2	2 Years and Above	Under 1 Year	1 Year and Under 2	2 Years and Above	Under 1 Year	1 Year and Under 2	2 Years and Above	Under 1 Year	1 Year and Under 2	2 Years and Above	Under 1 Year	1 Year and Under 2	2 Years and Above	Under 1 Year	1 Year and Under 2	2 Years and Above
Measles, Acute Bronchitis, Abcesses of Ear, and Dropsy ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Cancer	...	...	...	...	...	...	..	...	...	...	...	...	...	...	1	...	...	1
Acute Tuberculosis	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Wasting, Convulsions	1	...	...	...	..	...	...	...	...	...	...	...	...	...	..	1	...	...
Consumption ...	...	...	...	...	...	1	...	...	...	...	...	...	...	..	...	...	...	1
Paralysis and Natural Decay	...	...	1	...	...	..	...	..	...	...	...	...	...	..	...	...	...	1
An Epiliptic Fit ...	...	...	1	...	...	..	...	...	...	...	...	...	...	...	...	...	...	1
Convulsions	13	...	...	2	...	...	4	...	...	14	...	...	...	...	...	33	...	...
Convulsion Fits ...	2	...	...	...	...	...	...	...	...	...	...	...	5	...	...	7	...	...
A Fit	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
Fits during an attack of Whooping Cough ...	...	...	...	..	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Heart Disease ...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	2	...	..	4
Heart Disease, resulting from an attack of Small-pox ...	...	...	...	...	...	...	...	. .	1	..	...	...	...	...	...	...	...	1
Syncope of the Heart (suddenly)	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Bronchitis	...	...	1	...	...	...	...	...	..	...	...	...	1	...	...	1	...	1
Pneumonia, Exhaustion ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Premature Birth ...	7	...	...	1	...	...	2	...	...	...	...	...	1	...	...	11	...	..
Premature Birth, Convulsion Fit	...	...	...	...	...	.	...	...	...	...	...	...	1	...	...	1	...	...
Exhaustion, consequent on old age	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Old Age	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Debility	3	...	...	2	...	...	1	...	...	7	...	...	5	...	...	18	...	...
Weakness, Insufficient Respiration and Exhaustion	...	...	...	...	...	...	...	...	...	1	...	..	...	...	...	1	...	...
Exhaustion	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	2	...	...
Difficult Labour ...	2	...	...	...	...	...	...	...	. .	...	...	...	...	...	...	2	...	...
Vomiting of Blood ...	...	...	...	...	...	...	...	.	...	...	...	...	...	...	1	...	...	1
Internal Hæmorrhage	...	...	...	.	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Some Natural Cause probably Small-pox ...	...	...	...	...	...	...	..	...	1	...	...	...	...	...	...	...	...	1
Convulsions probably suppressed Measles ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Supposed Scarlet Fever ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Believed from Scarlatina or Convulsions ...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...
Carried forward ...	30	...	10	5	...	6	8	.	2	22	1	...	14	...	4	79	1	22

TABLE X.—Continued.

Uncertified Deaths in each Sub-District during the 52 Weeks ended 29th December, 1883.

Alleged Cause of Death.	Westgate			St Andrews'			St Nicholas'			All Saints'			Byker			Total		
	Under 1 Year	1 Year and Under 2	2 Years and Above	Under 1 Year	1 Year and Under 2	2 Years and Above	Under 1 Year	1 Year and Under 2	2 Years and Above	Under 1 Year	1 Year and Under 2	2 Years and Above	Under 1 Year	1 Year and Under 2	2 Years and Above	Under 1 Year	1 Year and Under 2	2 Years and Above
Brought forward ...	30	...	10	5	...	6	8	...	2	22	1	...	14	...	4	79	1	22
Consumption or some other Natural Cause	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
Believed from Consumption or some other Natural Cause ...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	2
Convulsions orsome other Natural Cause ..	2	...	...	...	...	...	1	...	...	...	...	..	1	...	...	4	...	...
Probably a Convulsion Fit ..	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	2	...	...
Believed from Convulsions ...	...	...	...	...	...	...	...	...	...	4	1	...	...	...	...	4	1	...
Believed from a Fit or some other Natural Cause	...	...	...	...	...	...	...	..	...	1	...	..	...	...	...	1	...	...
Believed in a Fit ...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...
Probably Heart Disease ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Suddenly, supposed from Heart Disease ...	...	...	...	...	...	1	...	...	..	...	...	..	...	...	1	...	...	2
Bronchitis or some Natural Cause	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2	...	1	2
Believed from Glands in the Bowels and Convulsions or some other Natural Cause ...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...
Sudden Internal Bleeding from some Natural Cause ...	1	...	...	...	...	..	...	...	...	...	...	...	...	...	...	1	...	...
Some Natural Cause...	1	...	1	...	...	...	...	...	...	...	...	...	3	...	3	4	...	4
Total...	35	...	12	5	...	7	9	...	2	29	3	2	18	1	11	96	4	34

TABLE XI.

RETURN OF DEATHS FROM MIASMATIC DISEASES FOR THE 52 WEEKS ENDED 29TH DECEMBER, 1883, CORRECTED BY DISTRIBUTION OF THOSE OCCURRING IN THE FEVER AND SMALL-POX HOSPITALS TO THE REGISTRATION SUB-DISTRICT FROM WHICH EACH CAME.

	Number in City.	Registration Sub-Districts.				
		Westgate.*	St. Andrew's.	St. Nicholas'.	All Saints'.	Byker.
Total Miasmatic Deaths	698	251	57	55	128	207
INCLUDING—						
Small-pox	60	12	3	6	13	26
Measles	209	87	19	7	33	63
Scarlet Fever	124	42	10	11	28	33
Diphtheria	11	3	1	...	2	5
Whooping Cough	51	17	...	3	14	17
Typhus	24†	4	1	10	4	5
Enteric Fever	42	21	2	4	5	10
Simple Continued Fever	7	4	...	..	1	2
Diarrhœa	105	39	13	5	19	29
Other Miasmatic Diseases... ...	65	22	8	9	9	17
Annual Rate of Death from Miasmatic Diseases per 1000 Population of each Sub-district	4·7	4·0	3·0	5·4	5·1	6·5
Small-pox	0·4	0·2	0·2	0·6	0·5	0·8
Measles	1·4	1·4	1·0	0·7	1·4	2·0
Scarlet Fever	0·8	0·7	0·5	1·0	1·1	1·0
Whooping Cough	0·3	0·3	0·0	0·3	0·6	0·5
Enteric Fever	0·3	0·3	0·1	0·4	0·2	0·3

* Excluding Benwell and Fenham.
† Including one death in Hospital not returned by Registrar.

TABLE XII.

ZYMOTIC DISEASES, A.D. 1883.

Street List of cases and deaths from the undermentioned diseases, corrected by distribution of the deaths occurring in the Fever and Small-pox Hospitals to the street from which each patient was removed.

Name of Street, &c.	* Cases and Deaths from							Deaths from Measles during 1883.	Deaths from Diarrhœa during 13 weeks ending 29th Sept., 1883.		
	Small-pox.	Scarlet Fever	Diphtheria.	Typhus Fever.	Enteric or Typhoid Fever.	Continued Fever.	Puerperal Fever.		Under 1 year.	1 yr & under 2	All ages.
Akenside hill ...	...	...	...	...	...	..	...	1	...	...	...
Albert street ...	3	4*	...	...	1*	...	...	1	..	...	..
Albion yd., New road	...	...	...	...	...	...	...	1	...	...	...
Argyle street ...	...	2	...	...	1	...	..	...	...	...	...
Argyle terrace ...	...	7**	...	...	...	...	...	...	...	...	...
Argyle place ...	...	4*	...	...	...	...	...	...	...	...	...
Alexandra crescent ...	...	1	...	1	...	...	...	...	...	...	...
Alexandra place ...	...	4	...	...	...	...	...	...	...	...	...
Alexandra street ...	...	2	...	...	...	...	...	1	...	...	...
Alexandra st. (back)	...	3	...	...	...	...	...	...	...	...	...
Alexandra terrace ...	..	1	...	...	...	..	...	...	.	...	...
Ancrum st., Spital tngs	...	...	...	...	...	...	...	...	...	...	1
Abinger street ...	3	1*	...	...	...	...	...	...	...	...	...
Arthur's hill board scls	...	...	...	...	1*	...	...	...	...	...	...
Ashfield terrace west	...	1	...	...	...	...	...	...	...	...	...
Addison road ...	13*	2	...	...	...	...	...	...	...	...	...
Addison street ...	8	1	...	...	1*	...	...	...	...	...	...
Alma terrace ...	...	...	...	...	1	...	...	...	...	...	...
Appleton's buildings	1	...	...	...	...	...	...	...	...	...	...
Albion row ...	4	...	...	...	2	...	...	...	...	...	...
Albion row (back) ...	...	3	...	...	...	...	...	...	...	...	...
Addison row ..	...	...	...	...	...	1	...	...	...	...	...
Bigg market (Half-moon yard) ...	..	...	...	...	1	...	...	...	...	...	...
Back row ...	1	...	...	2	...	...	...	...	...	...	...
Bailiffgate ...	2	...	...	..	...	...	...	...	...	...	...
Bank side ...	...	...	...	8*****	...	...	...	..	...	...	...
Black gate ...	1	...	...	...	...	...	...	...	...	...	...
Bedford place ...	2	...	...	...	...	...	...	1	...	...	...
Blagdon street ...	...	7*	...	...	1	...	..	1	...	...	...
Blythe's nook ...	1	...	...	...	...	...	...	...	...	...	...
Buxton street ...	1	...	...	...	...	...	...	1	...	...	...
Byron street ...	1	...	...	...	...	...	...	...	...	...	...
Bellegrove villas ...	...	...	1	...	...	...	...	...	...	...	...
Back lane ...	...	...	1	...	...	...	...	...	1	...	1
Barracks ...	1	2	...	.	1	...	...	...	...	...	...
Bellegrove terrace ...	..	1	...	...	1	...	...	...	...	...	...
Bolton terrace ...	...	2	...	...	...	...	...	...	...		...
Brunswick place ...	...	4*	...	...	...	...	...	...	...	...	...
Bulmer street ...	...	6	...	...	1	...	...	1	...	...	...
Barrass bridge ...	...	3	...	...	...	...	...	...	...	..	...
Blackett street ...	...	...	...	...	1*	...	...	...	...	...	...
Barrow's court (Newgate street ...	...	...	...	...	...	...	...	...	1	...	1
Bayley street ...	...	1	...	1	...	...	...	1	...	...	...
Barrack road ...	...	6	...	...	...	...	...	...	...	...	...

*The asterisks represents deaths and the numerals the total cases in each street.

TABLE XII.—CONTINUED.

Street List of Cases and Deaths from the undermentioned Diseases.

Name of Street, &c.	* Cases and Deaths from							Deaths from Measles during 1883.	Deaths from Diarrhœa during 13 weeks ending 29th Sept., 1883.		
	Small-pox.	Scarlet Fever	Diphtheria.	Typhus Fever.	Enteric or Typhoid Fever.	Continued Fever.	Puerperal Fever.		Under 1 year.	1 yr & under 2	All ages.
Bath lane Fever hospital	2	...	...	...	...	...	...	...	...	..	...
Beaconsfield street ...	3	1	...	...	...	...	...	...	...	...	...
Bell Street	5	2	...	..	1	...	..	...	...	...	...
Bell street (back) ...	...	2	...	...	...	...	...	...	...	...	...
Blandford street ...	5**	3	...	5*	1*	1*	...	7	...	...	...
Blandford street west	...	2	...	...	...	...	...	...	...	..	...
Do. (Park's yard)	1	...	...	...	...	...	..	...	...	...	...
Blenheim street ...	1*	9*	...	...	1*	...	...	4	1	...	1
Buckingham street ...	...	6	...	...	4	1	...	4	...	...	...
Beaumont street ...	3	1	...	...	...	...	...	...	...	...	...
Bell terrace	...	1	...	...	...	...	...	...	...	...	...
Bentinck road ...	...	3	1	...	...	...	...	...	...	..	...
Bentinck street ...	...	1	...	...	...	1	...	...	...	...	...
Bowman street ...	...	...	...	...	...	'	...	...	...	...	...
Brougham place ...	1	1	...	...	...	...	...	...	...	...	...
Brunel street... ...	...	...	...	...	...	...	...	1	...	...	...
Budle street	...	2	...	..	1	...		...	...	...	...
Byron terrace... ...	...	1	...	...	...	...	...	...	...	...	...
Belgrave terrace ...	...	1	...	...	2	...	...	...	...	...	...
Benwell house lodge...	...	...	...	...	...	1	...	...	...	..	...
Boundary street ...	...	1	...	...	...	. .	...	...	...	...	...
Burdon terrace ...	...	2	...	...	...	...	...	...	...	...	...
Bamborough street ...	3	...	...	...	...	...	...	...	...	...	...
Belvidere street ...	...	1	...	..	1	...	...	1	...	...	...
Bermondsey street ...	...	2*	...	1	1*	...	...	...	1	...	1
Brough buildings ...	...	5	...	...	...	...	...	...	...	...	...
Bryson terrace ...	4	1	...	...	1*	1	...	...	...	...	...
Burton street ...	...	1	...	...	...	...	...	...	...	1	1
Byker bank	23**	4*	...	2*	...	...	...	...	...	...	1
Byker village ...	1	1	..	...	...	...	...	1	...	...	...
Bolingbroke street ...	...	...	...	...	...	1*	...	...	...	...	...
Bird's nest	...	...	...	...	...	...	...	1	...	...	...
Byker buildings ...	8	1	...	...	...	...	...	8	...	...	...
Byker hill	...	...	...	...	1*	...	...	2	...	...	...
Byker hill square ...	...	1*	...	...	1	...	...	...	...	...	...
Byker square ...	3	...	...	...	...	...	...	...	...	...	...
Brewery bank ...	...	3	...	...	...	...	...	...	...	...	...
Castle square... ...	...	...	...	2	...	...	...	...	...	...	...
Close	..	...	...	1	...	4	...	...	...	...	...
Chapel yard (Tuthill stairs)	...	1*	...	...	...	...	...	...	...	...	...
Clayton street west ...	1	...	...	...	...	...	...	...	...	...	...
Clayton street ...	2*	3	...	...	...	...	...	...	...	-	...
Cross street	...	1*	...	...	...	...	...	...	...	...	...
Carliol square ...	1	...	...	...	...	..	...	...	...	...	...
Cox chare	...	4	...	...	...	...	...	...	...	...	...
Camden street ...	...	1	...	...	...	...	...	...	1	...	1
Canada street.. ...	...	3	...	...	...	...	...	...	...	...	...
Carliol street	...	...	...	...	1*	...	...	...	...	1	1

* The asterisks represent deaths and the numerals the total cases in each street.

TABLE XII.—CONTINUED.

Street List of Cases and Deaths from the undermentioned Diseases.

Name of Street, &c.	* Cases and Deaths from							Deaths from Measles during 1883.	Deaths from Diarrhœa during 13 weeks ending 29th Sept., 1883.		
	Small-pox.	Scarlet Fever	Diphtheria.	Typhus Fever.	Enteric or Typhoid Fever.	Continued Fever.	Puerperal Fever.		Under 1 year.	1 yr & under 2	All ages.
Carlton street ...	...	...	...	...	1	...	...	...	...	...	...
Chatham place ...	...	9**	...	...	...	...	...	...	...	...	...
Clarence crescent ...	...	2	...	...	...	...	...	...	...	...	...
Clayton's court, Pilgrim street	...	...	...	...	...	..	...	1	...	...	...
Chapel lane, Sandgate	...	...	...	..	...	...	...	...	1	...	1
Chapel buildings, Gibson street	...	9****	...	...	...	...	...	1	...	...	...
Clarence street ...	...	1	...	..	...	...	...	...	...	...	...
Copland terrace ...	1	...	...	...	...	...	...	1	...	...	...
Croft street	2	...	...	...	...	...	...	...	...	...	...
Croft stairs	...	...	...	1	...	1	...	1	...	...	...
Cut bank	6***	1	...	...	...	...	...	...	...	...	...
Crawhall terrace ...	...	1	...	...	...	...	...	...	...	...	...
Crozier's buildings, St. Ann's street... ...	...	2*	...	...	...	...	...	...	...	...	...
Chester street ...	...	2	...	...	2*	1*	...	1	...	...	...
Chester crescent ...	...	...	...	...	1	...	...	...	...	...	...
Cross row, Spital Tongues	...	...	...	...	1	...	...	...	...	...	...
Crescent place ...	3	1	...	...	1	...	...	...	1	...	1
Chambers' court, Newgate street	..	2	...	...	...	...	...	...	...	...	...
Croft court	...	...	...	...	...	...	...	1	...	...	...
Campbell street ...	...	3	...	...	1*	...	...	...	...	...	...
Centre street	..	3*	...	...	1	...	...	...	...	...	...
Church street ...	1*	...	...	...	...	...	...	...	...	...	...
Churchill street ...	...	3	...	...	...	...	...	...	...	...	...
Churchill cottages ...	...	1	...	...	...	...	...	1	...	...	...
Corporation street ...	2*	...	...	...	...	...	...	...	..	...	...
Cambridge street ...	...	2	...	...	...	...	...	...	...	...	...
Cannon street... ...	...	...	...	...	...	...	...	1	...	...	...
Carr street	...	1	...	...	...	...	...	...	...	...	...
Choppington street ...	...	1	...	...	...	...	...	...	...	...	...
Clumber street ...	1	2	...	...	11***	2	...	1	...	...	...
High Clumber street	...	7	...	...	...	...	...	...	...	...	...
Crispin street (back)	...	4	...	...	...	...	...	...	...	...	...
Cromwell street ...	...	1	...	...	...	...	...	...	...	...	...
Crown street	...	9**	...	...	...	...	...	...	...	...	...
Colliery Fields ...	1	...	...	...	...	...	...	...	...	...	...
Clayton Park road ...	...	4	...	...	...	...	...	...	...	...	...
Clayton Park square...	...	1	...	...	1	...	1*	...	...	...	...
Collingwood terrace...	...	1	...	...	...	...	...	...	...	...	...
High Chapel street ...	5*	...	...	...	...	...	...	...	...	...	...
Chapel street ...	2*	5*	...	...	...	...	...	...	...	...	...
Clifford street ...	8	1*	...	...	...	...	...	1	...	...	...
Clive terrace	4	...	...	...	...	...	...	...	...	...	...
Conyers road	4***	14*	...	...	4*	...	...	7	...	...	...
Cook street	...	3*	...	...	2*	...	...	3	1	...	1
Corbridge street ...	2**	2	...	...	2	...	...	3	...	...	...

* The asterisks represent deaths and the numerals the total cases in each street.

TABLE XII.—CONTINUED

Street List of Cases and Deaths from the undermentioned Diseases.

Name of Street, &c.	* Cases and Deaths from							Deaths from Measles during 1883.	Deaths from Diarrhœa during 13 weeks ending 29th Sept., 1883.		
	Small-pox.	Scarlet Fever	Diphtheria.	Typhus Fever.	Enteric or Typhoid Fever.	Continued Fever.	Puerperal Fever.		Under 1 year.	1 yr & under 2	All ages.
Crawford row ...	...	2*	...	...	...	...	...	...	...	...	...
Chapel buildings ...	...	1*	...	..	...	...	..	...	...	..	...
Dog-leap terrace ...	...	1	...	...	1	...	...	...	...	...	...
Dyer's court, Close ...	...	...	...	...	...	...	..	1	...	...	..
Dispensary lane ...	1	...	...	...	...	...	...	...	...	...	...
Dean street ...	2**	...	...	...	...	...	...	...	...	...	...
Day street ...	...	...	...	...	1	...	...	..	...	...	...
Dunn terrace, Spital Tongues	1	...	...	...	1*	...	...	...	...	...	...
Dunn's cottages, Spital Tongues	...	2	...	...	...	...	...	...	...	...	..
Darnell street ...	...	2	1	...	...	...	...	...	1	...	1
Derby street ...	3	3	...	...	..	...	...	...	1	...	1
Derby street (back) ...	...	4	...	...	...	...	...	..	...	...	...
Derwent place ...	1	...	...	...	...	...	...	...	...	...	...
Diana street ...	...	2	...	...	...	1	...	1	1	...	1
Douglass terrace ...	...	3	...	...	...	...	...	...	...	..	...
Duke street ...	3	1	...	...	...	...	...	2	...	...	...
De Grey street ...	1	..	...	...	...	...	...	1	...	..	...
Dobson street ..	...	3	...	...	...	...	...	...	...	...	...
Dunn street ...	...	1	...	...	...	...	...	...	...	...	...
Durham street ...	...	2	...	...	...	...	...	...	...	...	...
Dunn's cottages, Elswick East terrace ...	...	1	...	1	...	...	...	...	...	1	1
Delaval terrace ...	...	2	...	...	...	...	...	...	...	...	...
Dalton street ...	2	...	...	...	1	...	...	1	...	...	...
Denmark street ...	1	...	...	...	...	...	..	1	...	...	...
Dunn terrace, St. Anthony's	...	...	...	...	...	...	...	1	...	...	...
Dock row, St. Peters ...	...	3*	...	...	...	...	...	...	...	...	...
Egypt sq., New road...	...	3*	..	...	...	...	...	...	...	...	...
Eldon lane ...	...	...	...	...	...	...	...	1	...	...	...
Ellison place ...	...	1*	...	...	...	...	...	...	...	...	..
Ellison terrace ...	...	1	...	...	...	...	...	...	...	...	...
Erick street ...	...	3	...	...	...	...	...	...	...	...	...
Edward street ...	1	5	...	...	...	...	...	...	...	...	...
Edward street (back)	...	...	...	...	...	...	...	1	...	...	...
Elswick row ...	3	...	...	..	...	...	...	...	...	...	...
Elswick East terrace...	...	6	...	1	1	1*	...	2	...	...	...
Elswick place ...	...	3	...	...	...	...	...	..	...	...	...
Elswick road ...	...	2*	...	...	1	...	...	1	...	...	...
Elswick row ...	5*	...	...	...	...	...	...	...	1	...	1
Essex street ...	...	2*	...	..	1	...	...	...	...	...	...
Eskdale terrace ...	2	2	...	...	...	...	...	...	...	...	...
Eslington terrace ...	...	8	..	...	...	1	...	.	...	...	...
Edwin street ...	1	1	...	...	...	...	...	...	...	...	..
Elizabeth street ...	...	1	...	...	...	...	...	...	...	...	...
Ellison place	...	1	...	...	...	...	...	...	...	..	...
Engine street ...	1	1	...	...	...	...	...	...	...	...	...
Forth banks ...	1	...	...	...	2**	...	...	...	...		...

* The asterisks represent deaths and the numerals the total cases in each street.

TABLE XII.—CONTINUED.

Street List of Cases and Deaths from the undermentioned Diseases.

Name of Street, &c.	* Cases and Deaths from							Deaths from Measles during 1883.	Deaths from Diarrhœa during 13 weeks ending 29th Sept., 1883.		
	Small-pox.	Scarlet Fever	Diphtheria.	Typhus Fever.	Enteric or Typhoid Fever.	Continued Fever.	Puerperal Fever.		Under 1 year.	1 yr & under 2	All ages.
Forth terrace ...	...	4***	...	...	...	...	...	...	...	...	...
Forth terrace (back)...	...	1*	...	...	1	...	...	...	...	...	...
Fenkle street ...	1	...	...	...	...	...	...	...	...	...	...
Forth street ...	...	...	...	...	...	...	...	1	...	...	...
Friars	3	...	...	...	...	...	...	...	...	...	...
Tanners' court, Friars	1	...	...	...	...	...	...	1	...	...	...
Forth Lane	...	...	...	...	1*	...	...	...	...	...	...
Falconar street ...	2	4	...	...	...	...	...	...	...	...	...
Franklin street ...	...	1	...	..	...	...	...	...	...	...	...
Fountain road, Spital Tongues	...	3	...	...	...	..	...	...	...	...	...
Forth banks (Pitman's row)	...	...	...	4*	1	...	...	...	..	...	...
Do. (Waller's yard)...	...	..	...	...	1	...	...	...	...	...	...
Do. (Fish Curer's yd.)	...	1	...	...	...	...	...	...	...	...	...
Forth banks (Anderson's yard)	...	1	...	...	...	...	...	...	...	...	...
Fern Avenue ...	6*	1	...	...	...	...	...	...	...	...	...
Fernwood road ...	...	1	...	...	...	...	...	...	...	...	...
Ford st., Jesmond Vale	...	2*	...	...	...	...	...	...	...	...	...
Fairless street ...	2	7*	...	...	...	...	...	...	...	...	...
Fell street	.	1	...	2	1	...	...	..	...	...	...
Flora street	1	2	...	1	...	...	...	...	...	...	...
Foundry lane ...	12*	...	...	...	...	..	...	...	...	...	...
Do. yard ...	1	...	...	...	...	...	...	...	...	...	..
Foreman's row ...	1	1	...	...	...	...	...	...	...	...	...
Ford's court, Byker Bank	1	...	...	...	...	...	...	...	...	..	...
Garth Heads	...	9**	...	...	...	...	...	...	...	...	...
Gibson street	1*	8	1	2	4*	...	...	2	...	...	...
Gosforth street ...	...	2	...	...	...	...	...	...	...	...	...
Grenville street ...	...	1	...	...	...	...	...	1	...	...	...
Grenville terrace ...	...	1*	...	...	...	...	...	...	1	...	1
Gallowgate (Carnaby's court)	...	1	...	...	...	...	...	...	...	...	...
Gallowgate	...	7	...	...	2*	...	...	...	...	...	...
Do. Factory yard	...	...	...	1*	...	...	..	2	...	...	...
Do. Fleece court	...	2	...	...	3	...	1	...	...	...	...
Grainger street ..	...	4	...	...	...	...	...	...	...	...	...
Grey street (back) ...	...	1	...	...	...	...	...	...	...	...	...
Garden street ...	...	1	...	...	...	...	...	...	...	...	...
George street ...	...	16**	...	...	...	1	...	3	...	...	...
George street back ...	...	2*	...		...	...	...	...	1	...	1
Grainger low villa ...	...	3	...	...	...	...	...	...	...	..	...
George road ...	1	3	...	...	...	1	...	...	...	...	...
Gloucester road ...	2*	2	1	...	3**	...	...	...	...	...	...
Gloucester street ...	...	6	...	...	...	...	...	...	...	...	...
Gloucester terrace ...	...	1	...	...	...	...	...	...	...	...	...
Gluehouse lane ...	...	2*	...	...	...	...	..	...	...	...	...
Glue terrace ...	...	...	...	...	...	...	...	1	...	...	...

* The asterisks represent deaths and the numerals the total cases in each street.

TABLE XII.—CONTINUED.

Street List of Cases and Deaths from the undermentioned Diseases.

Name of Street, &c.	* Cases and Deaths from							Deaths from Measles during 1883.	Deaths from Diarrhœa during 13 weeks ending 29th Sept., 1883.		
	Small-pox.	Scarlet Fever	Diphtheria.	Typhus Fever.	Enteric or Typhoid Fever.	Continued Fever.	Puerperal Fever.		Under 1 year.	1 yr & under 2	All ages.
Grove street ...	...	...	...	...	...	...	...	1	...	...	...
Gowan villas ...	...	1	...	...	...	...	...	...	...	...	...
Granville road ...	...	2	...	...	...	...	...	...	...	...	...
Glasshouse street ...	1	1	..	...	...	...	...	...	...	...	...
Glasshouse st. (back)	1	...	...	...	...	...	...	...	...	...	..
Glendale terrace ...	1	...	...	...	...	...	...	...	...	...	...
Grafton street ...	...	5	...	...	...	...	...	...	...	..	...
Hanover street (back)	...	2	...	...	1*	...	...	...	...	...	...
Hanover square ..	...	1*	...	...	...	...	...	1	..	...	...
Hanover terrace ...	...	..	...	...	...	...	...	...	1	...	1
Henry street	4	...	...	...	...	...	...	...	..	...	...
Hume street	1	...	...	...	...	...	...	...	...	...	...
Holy Jesus Hospital, Manors	...	...	...	...	...	...	...	..	...	..	1
Heath's court, Pilgrim street	...	1	...	...	...	...	...	...	...	...	..
Half-moon lane ...	...	1	...	...	...	...	...	...	..	..	...
Harrison place ..	...	2	...	...	...	...	...	...	...	...	..
Higham place ...	1	...	...	...	...	...	...	...	...	..	...
Hunter road	2	3	...	...	...	1	...	..	...	...	...
High Friar street ...	...	7**	...	...	...	..	...	2	...	...	...
Hall's court, Newgate street	...	...	...	...	...	...	...	2	...	...	...
Hamilton street ...	...	1	...	...	1	...	...	...	...	..	...
Hamond street (back)	...	1	...	...	...	...	...	...	..	...	...
Harle street	1	1	...	...	...	...	...	...	...	...	...
Hedley place	...	...	...	...	...	1	...	1	...	...	...
Hedley street... ...	...	1	...	...	1	...	...	...	...	...	...
Hedley terrace ...	...	4	...	...	...	...	...	...	...	...	...
Hill street	...	1*	...	...	...	...	...	...	...	...	...
Hindhaugh street ...	...	...	...	...	1*	...	...	...	...	...	...
Hamilton street ...	2**	3	2	...	...	...	...	...	...	...	...
Hamsterley road ...	...	2	...	...	...	...	...	...	...	...	...
Havelock street ...	...	1	...	..	...	...	...	...	...	...	...
Hawes street	2	3**	...	...	4*	...	...	...	...	...	...
Hawthorn street ...	...	3	...	...	1	...	...	...	...	...	...
Hawthorn terrace ...	...	2	...	...	...	...	...	...	...	...	
Herbert street ...	1	1	...	...	2*	...	...	1	...	...	...
Hull street	...	2*	...	...	...	1	...	...	...	...	...
Hull street (back) ...	...	2	...	...	...	...	1	..	...	...	...
Houston street ...	.	1	...	...	...	...	...	...	...	...	...
Haldane terrace ..	1	1	...	...	...	...	...	...	...	...	...
Holly avenue... ...	1	4	1	...	...	...	...	...	...	...	...
Do. west	...	3	...	...	...	...	...	...	...	...	...
Hutton terrace ...	...	1	1*	...	...	1	.	...	...	...	...
Hannington place ...	...	...	...	...	1*	...	...	...	...	...	...
Hannington street .	...	2	...	...	...	...	...	...	...	...	...
Harvey street ...	5*	17	...	...	...	...	1	1	1	...	1
Harriett street ...	...	4***	...	...	...	...	...	...	...	...	...
Harbottle street ...	...	12*	...	...	...	...	...	...	...	...	...

* The asterisks represent deaths and the numerals the total cases in each street.

TABLE XII.—CONTINUED.

Street List of Cases and Deaths from the undermentioned Diseases.

Name of Street, &c.	* Cases and Deaths from							Deaths from Measles during 1883.	Deaths from Diarrhœa during 13 weeks ending 29th Sept., 1883.		
	Small-pox.	Scarlet Fever	Diphtheria.	Typhus Fever.	Enteric or Typhoid Fever.	Continued Fever.	Puerperal Fever.		Under 1 year.	1 yr & under 2	All ages.
Heaton terrace ...	...	2	...	...	...	...	...	...	...	...	...
Headlam street ...	2	3*	...	...	4	...	...	3	1	...	1
Hotspur street ...	1	1	1*	4*	...	...	...	...	...	...	...
Highvilla,St Anthonys'	1	...	...	...	..	...	...	...	...	...	...
Heaton park road ...	...	4	...	...	...	...	...	...	...	...	..
Heaton road	1	2*	...	...	1	...	..	..	...	...	...
Heaton low haugh ...	..	1	...	...	...	...	...	...	...	...	...
Heaton east	...	...	...	...	1	...	...	...	...	...	...
Industrial dwellings ..	...	...	...	...	...	...	...	2	...	...	...
Ivy street	1	...	...	...	1	...	...	...	...	...	...
Jefferson street ...	...	8	...	...	2	...	...	...	...	...	...
John street	2	...	...	1*	...	...	...	1	...	..	...
Judson place	1	...	...	...	...	...	...	...	...	...	...
Jesmond gardens ...	.	1	...	...	...	...	...	...	...	...	...
Jesmond road ...	...	6	...	...	...	...	...	...	...	...	...
Jesmond vale ...	1	8*	...	...	...	...	...	...	...	...	...
Jesmond grove ...	...	1*	...	...	...	...	...	...	...	...	...
James place	1	4	...	...	...	...	...	...	...	...	...
Janet street	...	1	...	...	...	...	...	...	...	...	...
Johnston's entry,Sandgate	...	2	...	...	...	...	...	2	1	...	1
Jubilee road	...	3	...	...	...	...	...	...	...	...	...
Kent street	1*	4	...	...	1	...	...	...	...	...	...
Kirk street	...	...	...	...	1	...	...	1	..	...	...
High Kirk street ...	...	1	...	...	...	...	...	...	...	...	...
Long stairs (Kinghorn yard)	...	7	...	...	...	...	...	...	...	..	...
Long stairs (Vagrant ward)	...	..	...	2	1	...	...	...	...	...	...
Low Friar street ...	...	2	...	1*	...	...	...	...	...	...	...
Lime street	7	1	...	...	1*	...	...	...	...	...	..
Do. (Mitcheson's yd.)	3	...	...	...	...	...	...	...	...	...	...
Little Blagdon street	...	...	...	...	...	...	...	1	...	...	...
Low bridge	...	1	...	...	4	...	...	2	...	...	...
Lambton place ...	...	3	..	...	...	...	...	...	...	...	..
Leazes crescent ...	...	...	...	...	...	2	...	...	...	...	...
Leazes lane	2	...	...	...	1	...	...	...	...	...	...
Leazes court	...	1	...	...	...	...	...	...	...	...	...
Leazes terrace ...	1	3	2	...	...	...	...	...	...	...	...
Liverpool lane ...	...	...	...	...	...	1	...	...	...	...	...
Liverpool street ...	1	2	...	...	...	...	...	1	1	...	1
Liverpool square ...	5*	1*	...	...	...	...	...	...	...	..	...
Long row (back) ...	1	...	...	..	...	...	...	...	...	...	...
Lovaine crescent ...	...	4	...	1	...	...	...	...	...	...	...
Lovaine place ...	3	2	...	...	1	..	...	...	...	...	..
Lancaster street ...	...	1	...	...	...	1	...	...	...	...	...
Lord street	...	2*	...	...	...	1	...	...	...	...	...
Lawton street ...	..	...	...	...	1	...	...	...	...	...	..
Loadman street ...	...	4	...	...	...	...	...	...	...	...	...
Longley street ...	...	1	...	...	...	...	...	...	...	...	...

* The asterisks represent deaths and the numerals the total cases in each street.

TABLE XII.—CONTINUED.

Street List of Cases and Deaths from the undermentioned Diseases.

Name of Street, &c.	* Cases and Deaths from							Deaths from Measles during 1883.	Deaths from Diarrhœa during 13 weeks ending 29th Sept., 1883.		
	Small-pox.	Scarlet Fever	Diphtheria.	Typhus Fever.	Enteric or Typhoid Fever.	Continued Fever.	Puerperal Fever.		Under 1 year.	1 yr. & under 2	All ages.
Lord Milton st. (back)	...	1	...	...	...	...	...	...	...	...	...
Lord Byron terrace ...	...	...	...	...	3	...	...	...	...	...	...
Lily avenue	...	2	...	...	...	...	...	...	...	...	...
Lily crescent	...	2	...	...	...	...	...	...	...	...	...
Langhorn street ...	...	4	...	...	...	..	...	...	...	...	...
Leighton street ...	2	...	...	...	...	...	...	...	...	...	...
Long row	1*	1	..	...	1	...	...	...	...	...	...
Low fold, Byker bank	1	...	...	...	...	...	...	1	...	...	...
Monk street	2**	...	...	...	..	...	...	...	...	...	...
Monk square	1	...	...	...	...	...	...	...	...	...	...
Millers' hill, New road	1*	...	...	...	..	...	...	...	1	...	1
Maling street... ...	...	...	...	...	...	...	...	1	...	...	...
Melbourne street ...	2	2*	...	4	1	...	...	...	...	...	...
Milk market... ...	...	1	...	...	...	...	...	...	...	...	...
Minden street ...	...	1	...	...	...	...	...	...	...	...	...
Milton street	1	1	...	...	...	...	...	...	...	...	...
Morpeth street ...	...	8	...	...	1	...	...	...	...	...	...
Market street... ...	1	1	...	...	...	...	...	...	...	..	...
Mansfield street ...	...	7**	...	...	...	...	...	...	...	...	...
Marlborough st. (back)	...	...	...	...	1	...	...	3	...	...	...
Mary street	...	...	...	...	2	...	...	...	...	...	...
Moor street	...	1	...	...	...	...	...	...	...	...	...
Maiden street... ...		2	...	...	...	...	...	1	...	...	...
Malvern street ...	...	...	...	...	1*	...	...	...	...	...	...
Marsden street ...	1	...	...	...	...	...	...	...	...	...	...
Mather street... ...	1	1	...	...	...	...	1	...	...	...	...
Meldon street... ...	...	1*	...	...	...	...	...	...	...	...	...
Middle street	...	1*	...	...	1	...	...	...	...	...	...
Mill lane	...	9*	1*	...	1*	...	...	4	...	...	...
Mill street (Elswick)	...	2	...	...	...	...	...	1	...	...	...
Mitford street ...	3	5*	...	...	...	...	...	1	...	...	...
Mill street, (Jesmond Vale)	...	6	...	...	...	...	...	...	...	...	...
Moor edge	1	4	...	...	...	...	...	...	...	..	...
Matthew street ...	2	2	...	...	...	...	...	...	...	...	...
Mawson srreet ...	...	2	...	...	...	...	...	1	...	...	...
Miller's lane	2	...	...	...	...	...	...	...	...	...	...
Morrison street ...	...	4**	...	...	..	...	...	...	...	...	...
Malcolm street east ...	...	1*	...	...	...	...	...	...	...	...	...
Malcolm street ...	2	1	...	...	...	...	...	1	...	...	...
Molineux street ...	5	2	...	...	4	...	...	1	...	...	...
Mushroom	...	2	..	...	...	...	...	...	...	...	...
Newgate street ...	1*	1	...	...	3	...	...	1	...	...	...
Do. (Taylor's crt.)	...	...	1*	...	...	...	...	...	..	...	...
Do. (Phœnix court)	1	...	...	..	...	...	...	...	...	...	...
Napier street	...	5**	...	...	...	...	...	...	...	...	...
New Bridge street ...	...	1	...	...	...	...	.	...	...	...	...
New road	1	11**	...	6	2	...	...	1	...	...	1
Do. (Johnson's entry)	...	...	...	...	1	...	...	...	...	...	...

* The asterisks represent deaths and the numerals the total cases in each street.

TABLE XII.—CONTINUED.

Street List of Cases and Deaths from the undermentioned Diseases,

Name of Street, &c.	* Cases and Deaths from							Deaths from Measles during 1883.	Deaths from Diarrhœa during 13 weeks ending 29th Sept., 1883.		
	Small-pox.	Scarlet Fever	Diphtheria.	Typhus Fever.	Enteric or Typhoid Fever.	Continued Fever.	Puerperal Fever.		Under 1 year.	1yr & under 2	All ages.
New road, (Albion yd)	...	1	...	...	...	...	...	...	...	...	...
Do. Scott's entry	...	...	1*	...	...	...	1	...	...	...	...
Newton street ...	...	1	...	...	...	...	...	...	...	...	...
Northumberland place	...	1	...	...	...	...	...	...	...	...	...
Northumberland street	..	2	2	...	...	...	...	...	...	...	...
Northumberland street (Elswick court) ...	1	...	...	...	1	...	...	...	...	...	...
Nixon street	...	1*	...	...	...	...	...	...	...	...	...
Nesham place ...	1	...	...	...	...	...	...	...	..	...	...
North terrace... ...	...	4	...	...	...	...	...	...	...	...	...
New Mills	...	...	...	...	...	...	...	...	1	...	1
Northcote street ...	...	1	...	...	...	...	...	...	...	...	...
Newcombe street ...	1	9*	...	...	1*	...	...	3	...	...	...
Noble street	1	1	...	...	...	...	...	2	...	...	...
Normanton terrace ...	...	4	...	...	...	...	...	...	...	..	...
Norfolk road	2	1	...	...	...	...	...	1	...	...	...
North view	...	3	..	...	...	...	...	...	...	...	...
Orchard street ...	...	...	...	...	...	...	...	...	1	...	1
Do, (Slater's yd)	1	..	...	...	...	...	...	...	...	...	...
Ouse street	13**	1	...	...	...	...	...	2	...	...	...
Ouse street Back ...	1	...	...	...	...	...	...	...	...	...	...
Ouse street, (Miller's yard)...	1	...	...	...	...	...	...	..	...	...	...
Ouse street, (Mordue's court)	...	1	...	..	...	...	...	...	...	...	...
Old Robin Hood yard, (Pilgrim street) ...	..	3**	..	...	...	..	...	..	...	...	...
Oaks place	...	2	...	...	...	...	...	...	...	...	...
Oaks square	...	2	...	...	...	...	...	...	...	...	...
Oystershell lane ...	...	..	...	...	3*	...	...	2	1	...	1
Ord street	...	1	...	...	...	...	...	...	...	...	...
Old Colliery Field, Elswick	1*	...	...	...	...	...	...	...	...	...	...
Osborne avenue ...	...	...	...	..	1	...	...	...	...	...	...
Osborne road	2	6	...	1	...	...	...	...	...	...	...
Osborne villas ...	...	1	...	...	...	...	...	...	...	...	...
Otterburn terrace ...	...	2	...	...	...	...	...	...	...	...	..
Pink lane	...	...	...	...	...	...	...	1	...	...	...
Postern	...	...	...	1	...	...	...	...	...	..	...
Pudding chare ...	...	1	...	...	...	...	...	...	...	...	...
Pilgrim street ...	1	14	...	...	...	1	...	1	...	...	...
Painter heugh ...	...	..	...	3**	...	...	...	...	...	...	...
Pandon (Tinner's entry)	...	...	...	...	...	...	...	1	...	...	...
Picton terrace ...	8*	1	...	...	...	...	...	...	...	...	...
Picton terrace back ...	1	...	...	...	...	...	...	...	...	...	...
Pleasant row	...	1	...	...	...	...	...	...	...	...	...
Portland road ...	...	1	...	...		...	...	...	...	...	...
Park place	...	...	...	...	1	...	.	...	...	...	...
Park terrace	1	...	...	...	...	...	...	...	...	...	...

* The asterisks represent deaths and the numerals the total cases in each street.

TABLE XII.—CONTINUED.

Street List of Cases and Deaths from the undermentioned Diseases.

Name of Street, &c.	* Cases and Deaths from							Deaths from Measles during 1883.	Deaths from Diarrhœa during 13 weeks ending 29th Sept., 1883.		
	Small-pox.	Scarlet Fever	Diphtheria.	Typhus Fever.	Enteric or Typhoid Fever.	Continued Fever.	Puerperal Fever.		Under 1 year.	1 yr & under 2	All ages.
Percy street	1	4*	...	...	1	...	...	1	...	...	...
Percy court	1	2	...	...	...	...	...	2	1	...	1
Percy place	...	2	...	...	...	...	...	...	...	...	...
Picton place	1	...	...	...	...	...	...	...	...	...	...
Percy street (Patterson's court)	...	1	...	...	...	...	...	1	...	...	..
Pace's buildings (Gallowgate)	...	3	...	...	...	...	...	1	...	...	...
Prudhoe street ...	...	2	...	...	1	...	...	1	...	...	1
Prudhoe Place (No. 1 court)	...	...	...	...	...	...	...	...	...	...	...
Palace street	...	2	...	...	...	...	...	...	...	...	...
Peel street	...	4*	...	...	...	...	...	1	...	...	...
Peel lane	...	4	...	...	...	...	...	...	...	...	...
Pitt street	1	5	...	...	...	...	...	3	...	...	...
Panmure street ...	2	1	1	...	...	...	...	2	...	...	...
Park road	...	3	...	...	...	...	...	1	...	..	...
Penn street	3	6	...	...	...	...	...	...	...	...	...
Pine street	...	4	...	...	1*	...	...	...	...	...	...
Do. (Back) ...	...	1	...	...	...	...	...	...	...	...	...
Portland street ...	...	...	...	...	5*	...	...	...	...	...	...
Palace street	...	1*	...	...	...	...	...	...	...	...	...
Portland terrace ...	...	1	..	...	...	...	...	...	...	...	.
Parker street	7	8**	..	...	2	...	...	2	5	...	5
Pump lane	3*	...	...	...	...	...	...	...	...	...	...
Plummer row	1	...	...	...	...	...	...	...	...	...	..
Portland road	1	2	2	...	...	...	...	1	...	...	...
Pottery lane (Frth. bks.)	1	9	...	...	...	...	...	...	...	...	...
Pottery house, (St. Anthony's)	1	...	...	...	...	...	...	...	...	...	...
Pottery bank „ ...	...	...	...	1*	2	...	...	...	...	...	...
Pottery square „ ...	...	...	...	...	1	...	...	...	...	...	...
Pottery field „ ...	...	...	...	...	1	...	...	...	...	...	...
Potts street	3	3*	...	...	...	...	...	2	...	...	...
Pit row	1	...	...	...	...	1	...	...	...	...	...
Quayside	1	...	...	...	...	...	...	...	...	...	...
Quality row	8	...	...	...	...	1	...	1	1	...	2
Do. Back ...	2	...	...	...	...	...	...	...	...	...	...
Regent street	...	3**	...	...	...	...	...	...	...	...	...
Regent terrace ...	...	...	1*	...	..	...	...	...	...	..	.
Richmond place ...	1	2	...	...	...	...	...	1	...	...	...
Richmond street ...	1*	9**	...	...	1	...	..	1	...	...	...
Ridley street	...	1	...	...	1	...	...	...	...	...	...
Ridley villas	...	1	...	...	...	...	...	...	...	...	...
Russell terrace ...	...	...	...	...	...	...	...	1	...	...	...
Ridley place	...	1*	...	1	...	...	...	...	...	...	...
Ravensworth terrace ..	...	1	...	...	...	...	...	...	...	...	...
Ryehill	...	2	...	...	...	...	...	1	...	...	...
Railway street ...	2	5	1	1*	...	...	...	...	1	...	1
Railway terrace ...	...	...	...	...	...	...	...	1	1	...	1

* The asterisks represent deaths and the numerals the total cases in each street.

TABLE XII.—CONTINUED.

Street List of Cases and Deaths from the undermentioned Diseases.

Name of Street, &c.	* Cases and Deaths from							Deaths from Measles during 1883.	Deaths from Diarrhœa during 13 weeks ending 29th Sept., 1883.		
	Small-pox.	Scarlet Fever	Diphtheria.	Typhus Fever.	Enteric or Typhoid Fever.	Continued Fever.	Puerperal Fever.		Under 1 year.	1 yr & under 2	All ages.
Railway ter. (cottage)	...	...	...	...	1	...	...	...	...	...	...
Ramshaw street ...	...	10*	...	...	...	..	...	3	...	...	...
Rendel street	...	4	...	...	1	1	...	1	...	...	..
Raglan place (Penn street)	...	2**	...	...	...	...	...	...	...	...	..
Raby street	...	5	...	...	2*	...	...	...	..	...	...
Ripponden street ...	13**	...	...	...	...	...	...	...	...	..	...
River street	...	...	1*	...	...	...	...	...	...	...	...
Robinson street ...	2*	...	...	...	...	...	...	1	...	...	1
Ropery terrace ...	3	...	...	...	...	...	...	...	...	...	...
Ropery walk	..	3*	...	..	..	...	...	...	...	...	...
Do. cottages, Albion row	1	...	...	...	...	...	...	...	...	...	...
Rosedale terrace ...	...	...	...	...	1*	1	...	...	...	...	...
Do. street ...	...	...	...	...	1	...	...	...	1	...	1
River Side, St. Anthony's	...	1	...	...	...	...	...	...	.	...	...
Side	1	...	...	...	..	...	...	...	1	...	1
Side (Hogg's yard) ...	...	1	...	...	...	...	...	...	...	...	...
Stowell street... ...	2*	5*	...	...	...	...	...	...	1	...	1
Stowell street (Ratcliffe's court ...	1*	...	...	...	...	...	...	...	...	...	...
Stowell st. (No. 1 crt.)	...	...	...	...	...	...	...	1	...	...	...
Stowell square ...	...	2	...	1	...	...	...	...	...	...	...
South street	1	..	...	...	...	...	...	...	...	...	...
Sandhill	...	1	...	...	...	...	...	...	...	...	...
Silver street	...	1	...	1*	...	...	...	...	...	...	...
Sandgate (Nag's Head entry)	...	...	...	...	1	...	...	...	...	...	...
Sandgate (Cellars entry)	...	1*	...	...	...	...	...	...	...	...	...
Do. (Addy's entry)	...	2	...	...	..	...	...	...	...	...	...
Spicer lane	...	...	...	...	...	1*	...	...	...	...	...
Sarah street	...	...	...	...	1	1	...	...	...	...	...
Shieldfield green ...	...	1	...	...	...	...	...	...	...	...	...
Shieldfield lane ...	...	3*	...	...	...	...	...	...	...	...	...
Shield street	...	6	...	...	2	...	...	...	...	...	...
Simpson terrace ...	...	...	...	1*	...	...	...	...	...	...	...
Stepney bank... ...	4	1	1*	...	...	...	...	..	...	...	...
Do. (Mill yard)	...	2*	...	...	...	...	...	...	...	...	...
Stepney lane	3**	4*	...	...	...	...	...	...	...	...	...
St. Anns' row... ...	...	4	...	...	...	...	...	1	...	...	...
St. Anns' street ...	...	3*	...	1	1	...	...	1	...	...	...
St. Mary's street ...	...	2*	...	...	...	...	...	...	...	...	...
Stockbridge		...	...	...	...	...	...	...	...	1	1
St. Anns' terrace ...	...	1	...	1	...	...	..	...		...	...
St. Mary's terrace ...	...	1	...	...	...	...	...	...	...	...	...
Sandyford road ...	...	12*	...	...	...	...	...	...	...	...	...
Sandyford square ...	...	5	...	...	...	...	...	...	...	...	...
Sheraton street ...	...	3	...	...	...	...	...	...	...	...	...

* The asterisks represent deaths and the numerals the total cases in each street.

TABLE XII.—CONTINUED.

Street List of Cases and Deaths from the undermentioned Diseases.

Name of Street, &c.	* Cases and Deaths from							Deaths from Measles during 1883.	Deaths from Diarrhœa during 13 weeks ending 29th Sept., 1883.		
	Small-pox.	Scarlet Fever	Diphtheria.	Typhus Fever.	Enteric or Typhoid Fever.	Continued Fever.	Puerperal Fever.		Under 1 year.	1 yr & under 2	All ages.
St. Andrew's street ...	...	2	...	...	...	...	...	..	...	...	...
St. Thomas' street ...	...	1	...	...	...	...	...	..	...	...	...
St. Thomas' terrace ...	2	...	...	...	1	...	...	...	...	...	...
Spital tongues ...	...	..	...	...	...	...	...	...	1	...	1
Smith's court, (Prudhoe street)	...	...	...	...	1	...	...	...	...	...	1
Scotswood road ..	1	13*	...	...	...	3	...	4	1	...	1
Scotswood road (back)	...	...	...	...	...	...	...	...	...	1	1
Seaham street ...	...	4*	...	...	..	...	...	1	...	...	...
Skinners' burn ...	...	...	...	...	...	..	...	1	...	...	...
Snow street	...	1	...	...	...	...	...	1	..	...	...
Spring Garden lane ...	1	7	...	...	2*	...	...	2	...	...	..
Spring street	...	4	...	...	..	...	...	...	...	...	...
Stanhope street ...	2	19****	..	...	4	1	...	1	...	1	1
Stanton street ...	...	4	...	..	..	...	...	...	...	...	..
Stone street	5	7****	1*	...	...	...	...	1	...	...	..
Summerhill street ...	...	1	...	...	..	1	...	...	...	...	...
Summerhill place ...	1	1	...	...	...	...	...	...	..	...	...
Summerhill terrace ...	...	2	...	...	...	...	..	...	...	...	..
Summerhill grove ...	...	1	...	...	...		...	...	...	...	...
Sunderland street ...	1	1	...	...	...	...	...	...	...	...	...
Swinburne place ...	...	...	..	...	...	...	...	1	...	...	...
Shumac street ...	1	...	...	...	...	...	...	...	...	.	...
Stanley street ...	1	4	...	...	...	...	...	...	...	...	...
Strickland street ..	...	4	...	..	...	...	...	...	...	...	...
St. Stephen's terrace	...	2	...	...	...	...	...	...	...	...	...
Suffolk street... ..	2	2	...	...	2	...	...	1	...	...	...
Sycamore street ...	1	20	...	...	2	...	...	1	...	...	...
South parade	...	..		...	1	...	...	...	...	...	...
Sandyford court ...	...	5	...	...	...	...	...	...	...	...	...
Do. lane ...	...	1	...	...	...	...	...	...	...	...	...
Salisbury street ...	14***	...	...	1	1	...	...	...	...	...	...
Shields road	3*	6*	...	...	...	...	...	1	...	...	...
Shipley street... ...	1	5*	...	..	4*	...	...	3	...	...	...
Stoddart street ...	1	...	...	1*	1	...	...	..	...	...	..
Stepney street ...	...	3	...	...	..	...		...	...	...	...
Stepney villas ...	...	1	...	...	...	...	...	...	...	...	...
Stepney road	...	4	...	...	...	...	..	...	...	...	...
Do. (Fenwick's yard)	3	...	...	...	...	...	...	...	...	...	...
Stepney square (back)	...	5*	...	..	...	...	...	...	...	...	...
St. Anthony's... ...	2	...	...	...	...	...	...	...	..	...	...
St. Peter's	...	...	...	1*	...	..	...	1	...	...	..
Stratford road ...	...	...	...	...	...	...	...	1	...	...	..
St. Lawrence	2	...	...	...	...	...	...	2	..	...	...
Do. square...	...	...	...	...	1	...	...	...	...	...	...
Do. house ...	1	...	...	...	...	...	...	1	...	...	...
Tuthill stairs back ...	..	3	...	1	...	...	...	...	...	...	...
Temperance row ...	..	1	...	...	...	...	...	...	...	...	...
Trafalgar street ...	...	...	...	...	...	...	...	1	...	...	...
Trafalgar street (Bk.)	..	1	...	...	...	...	..	...	...	...	...
Terrace place... ...	...	2	...	...	...	3	...	1	...	...	...

* The asterisks represent deaths and the numerals the total cases in each street.

TABLE XII.—CONTINUED.

Street List of Cases and Deaths from the undermentioned Diseases.

Name of Street, &c.	* Cases and Deaths from							Deaths from Measles during 1883.	Deaths from Diarrhœa during 13 weeks ending 29th Sept., 1883.		
	Small-pox.	Scarlet Fever	Diphtheria.	Typhus Fever.	Enteric or Typhoid Fever.	Continued Fever.	Puerperal Fever.		Under 1 year.	1 yr & under 2	All ages.
Temple street... ...	...	...	...	...	...	...	...	1	...	...	...
Thorpe sireet	...	3	1*	..	1	...	...	..	...	...	...
Tamworth road ...	...	1	..	...	...	...	...	...	...	...	...
Teynham street ...	...	4	...	...	...	...	...	...	...	...	...
Tulloch street... ...	2	8**	2	...	...	...	...	1	...	...	...
Tweed street	...	...	...	...	1	...	...	...	...	...	...
Tyneside terrace ...	...	...	...	...	...	.	...	1	...	...	...
Thompson street ...	8	2	...	1	1	...	...	...	...	...	...
Thornborough street...	7*	3	1*	...	2	...	...	3	1	1	2
Turner street	...	1	...	...	...	...	...	...	1	.	1
Tynemouth road ...	1	2	...	...	...	...	...	...	...	...	...
Tyne terrace	...	..	...	...	1	...	...	...	...	...	...
Union street	3*	4	...	1	2	1	...	...	...	...	...
Union terrace south ...	1	...	...	...	...	...	..	...	...	...	...
Victoria terrace ...	1	...	...	...	...	...	...	...	...	.	...
Vincent street ...	...	9	...	...	..	...	...	1	...	...	...
Victoria place ..	...	..	...	...	...	...	...	...	1	.	1
Vine lane	..	1	...	...	...	...	...	...	...	...	...
Villa place	...	...	...	...	1	...	...	...	..	...	..
Villa place (back) ...	...	...	...	...	1	...	...	...	...	...	...
Vale street	...	1	...	...	...	...	...	..	...	.	...
Victoria street ...	...	1	...	...	...	...	...	...	...	.	..
Wall Knoll (High yd)	...	...	...	1	...	...	...	...	...		...
Wesley street... ...	3*	8	...	...	...	...	...	...	...	..	...
White Boar entry, (St. Ann street)	...	...	...	...	...	...	...	1	..	...	...
Wrangham's entry. (Sandgate)	...	...	...	...	...	...	...	1	...		...
Wellington street ...	...	2	...	...	...	...	...	...	...		...
Wellington street (bk)	...	1	...	...	...	...	...	...	...	.	...
West street	4	1	...	...	...	...	...	...	...	...	...
Westgate road ...	4	7	...	4*	1	...	...	4	1	1	2
Westgate road (Dawson's court)	2	...	...	13**	...	...	...	...	...	...	...
Westmoreland street...	...	2	...	...	...	...	..	...	...	...	
Westmoreland lane ...	...	3	...	..	...	...	...	...	...	...	
Westmoreland terrace	...	...	...	...	3	...	...	...	...	.	...
Westmoreland road ...	...	2	...	...	1	...	...	...	...	...	...
William street ..	1	..	...	...	...	...	..	...	...	...	...
Worley street... ...	5*	8	...	...	...	...	...	...	...	...	...
Wentworth place ...	...	1	...	...	..	...	...	...	..	...	..
West parade	1	..	...	...	...	...	...	..	...	..	..
Wharncliffe street ...	...	2	1	...	1	...	...	1	...	...	...
Wylam road	4*	1	...	...	...	...	...	1	...	...	...
Waterside cottages ...	..	..	...	1	...	...	...	..	..	...	...
Windsor crescent ...	...	1	...	...	...	...	...	...	...	...	...
Warkworth street ...	...	1	...	...	...	...	...	...	..	...	...
Walker road	...	...	...	...	1	...	...	...	...	...	..
Wilfred street ...	1	5*	...	1	...	...	...	1	...	...	...
Walker New rd. (Hawthorn's buildings) ...	1	1	...	...	1	...	...	...	...	...	...
Yorkshire street ...	...	2	...	...	4	...	...	...	...	...	...

* The asterisks represent deaths and the numerals the total cases in each street.

TABLE XIII.

ADMISSIONS TO AND DEATHS AT THE FEVER AND SMALL POX HOSPITALS FROM 1ST JANUARY TO 31ST DECEMBER, 1883.

DISEASES.	ADMISSIONS.													DEATHS.										
	Jan.	Feb.	Mar.	April	May.	June	July	Aug.	Sept.	Oct.	Nov	Dec.	Total	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Oct.	Nov.	Total
Small-pox ...	41	51	39	33	49	32	12	2	...	...	...	...	259	3	6	9	5	7	4	4	1	...	...	39
Scarlet Fever ...	...	...	...	...	1	2	1	3	1	2	2	1	13	...	...	...	...	...	...	...	...	...	...	...
Typhus Fever ...	18	12	20	8	6	3	4	2	...	1	1	1	76	2	6	3	4	...	1	1	...	1	...	18
Enteric Fever ...	2	5	5	...	1	1	1	4	...	5	4	2	30	...	2	...	...	...	...	...	1	...	...	3
Continued Fever	1	...	...	...	...	...	...	...	...	1	1	...	3	...	...	...	...	...	...	...	...	...	2	2
Roseola... ...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Other Diseases not febrile	...	...	...	...	...	...	1	1	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...
TOTAL ...	62	68	64	41	58	38	19	12	1	9	8	4	384	5	14	12	9	7	5	5	2	1	2	62

TABLE XIV. (A)

RETURN OF FISH RECEIVED IN NEWCASTLE FISH MARKET, CLOSE, FROM 23RD DECEMBER, 1882, TO 22ND DECEMBER, 1883.

DESCRIPTION.	Delivered by Boat.					Delivered by Rail.				
	Baskets	Barrels.	Boxes.	Bags.	Fish.	Baskets	Barrels.	Boxes.	Bags.	Fish.
Cod	320	179	...	...	...	154	749	...	...	...
Gurnet	27	63	...	...	...	...	7	...	...	...
Haddock	3,588	...	...	...	...	1,476	605	...	...	...
Herring	...	16	...	...	...	25	1,596	...	..	...
Ling	164	337	...	...	...	42	3,573	...	...	...
Mackerel	...	...	...	...	...	...	...	1,247	..	...
Salmon	...	...	...	...	...	...	...	7	...	...
Trout	...		2	...	...	...	...	1	...	..
Black Jack	121	18	...	...	...	4	74	...	...	...
Whiting	313	2	...	...	...	21	11	...	...	...
Hake	...	...	...	...	60	...	...	...	...	..
Halibut	7	17	...	...	...	6	70	...	...	...
Plaice	125	2	...	...	...	9	305	...	...	...
Skate	128	77	...	...	...	3	367	...	...	...
Soles	69	...	...	..	...	2	...	...	..	...
Turbot	...	...	...	...	132	...	...	...	...	5
Cat-fish	..	...	...	...	269	...	...	...	...	4
Dog-fish	..	...	...	...	2	...	...	...	..	...
Lump-fish	...	...	...	...	1	...	...	...	..	...
Monk-fish	...	...	...	..	418	...	...	...	...	40
Cockles	...	...	...	...	...	...	...	...	8	...
Mussels	...	...	...	...	...	..	...	..	105	...
Crabs	...	2	...	...	...	...	63	...	...	...
Lobsters	...	...	...	...	...	...	21	...	..	...
Cray-fish	...	...	...	...	...	...	4	...	...	3
Whelks	...	...	...	...	...	...	...	...	59	...
Winkles	...	8	...	...	...	...	168	...	...	...
Shrimps	...	...	...	...	...	38	...	...	...	...
Prawns	243	...	...	...	...	23	...	...	...	...
Findon Haddocks	...	...	168	...	...	...	...	5,873	...	...
Kippers	...	...	114	...	...	...	...	2,551	...	...
Bloaters	...	...	12	...	...	...	...	1,013	...	...
Sprats	...	...	...	...	...	...	291	...	...	...
Oysters	...	...	...	...	...	...	...	...	2	...
Totals	5,105	721	296	...	882	1,803	7,904	10,692	174	52

Grand Total.....27,629.

A number of Boxes, &c., containing various Fish, have been condemned, being bad from heat, close packing, and delay in transit. No diseased Fish has been found.

(Signed) WILLIAM T. CLARKE,
CHIEF INSPECTOR OF NUISANCES AND INSPECTOR OF FISH.

TABLE XIV (B).

RETURN OF SUSPECTED AND UNWHOLESOME PROVISIONS INSPECTED DURING THE YEAR 1883.

PROVISIONS INSPECTED.	Amount Inspected.	CONDITION.		BAD—HOW DISPOSED OF.	
		Fit for Food.	Unfit for Food.	Destroyed by Order of Justice.	Destroyed with Owner's consent.
Carcases of Beef	315	245	70	5	65
,, Veal	28	7	21	1	20
,, Mutton ...	300	216	84	5	79
,, Pork	123	7	53	...	53
Barrel of Pork	1	...	1	...	1
Geese	73	...	73	5	68
Chickens	19	...	19	...	19
Hares	141	...	141	21	120
Sets of Tripe	2	...	2	2	...

Of the 245 cases of beef returned as fit for food, 92 of the animals had been bruised less or more during transit by steamer from the Continent. All the bruised parts were cut off and destroyed.

Five persons have been summoned before the Magistrates for being owners of unsound provisions intended for human food. Two were fined £5 each and costs; two 40/ each and costs; and one 20/ and costs.

WM. HEDLEY, INSPECTOR.

TABLE XV.

INFECTED ARTICLES DESTROYED AND REPLACED BY THE HEALTH DEPARTMENT DURING THE YEAR 1883.

166 Half Straw Mattresses	1 Feather Bolster
54 Straw Beds	10 ,, Pillows
8 ,, Bolsters	2 Rabbit Down Beds
6 ,, Pillows	1 ,, Pillow
2 Bed Ticks	7 Quilts
35 Flock Beds	3 Sheets
10 ,, Bolsters	13 Rugs
22 ,, Pillows	1 Blanket
4 Feather Beds	

INFECTED ARTICLES PURIFIED IN THE DISINFECTING APPARATUS.

FROM THE CITY.	FROM THE FEVER HOSPITAL.
328 Feather Beds	109 Beds
412 Flock ,,	71 Mattresses
977 Mattresses	169 Pillows
1,249 Pillows	12 Bolsters
679 Bolsters	306 Blankets
617 Blankets	152 Rugs
636 Rugs	10 Counterpanes
346 Counterpanes	1,566 Articles of Wearing Apparel
263 Bed and Window Curtains	36 Boxes of Nurses' and Servants' Clothing
89 Cushions	29 Miscellaneous Articles
12 Hearth Rugs and Door Mats	
288 Carpets	
12 Books	
978 Articles of Wearing Apparel	
50 Miscellaneous Articles	

TABLE XVI.

SUMMARY OF CASES DISINFECTED BY THE HEALTH DEPARTMENT DURING THE YEAR ENDED 31ST DECEMBER, 1883.

PARISH OR TOWNSHIP.	NATURE OF DISEASE.								
	Small-pox.	Measles.	Scarlet Fever.	Diph-theria.	Typhus Fever.	Enteric or Typhoid Fever.	Con-tinued Fever.	Puer-peral Fever.	TOTAL.
Elswick	54	...	244	8	5	54	12	2	379
Westgate..	60	...	207	5	8	36	11	1	328
St. Andrew's	25	1	134	3	2	19	8	1	193
St. John's	24	...	24	1	18	2	...	...	69
St. Nicholas'	6	...	21	...	18	6	5	...	56
All Saints'	84	10	256	3	29	31	5	1	419
Jesmond	15	...	79	4	4	2	1	1	106
Byker	248	1	180	2	14	48	1	1	495
Total	516	12	1,145	26	98	198	43	7	2,045

TABLE XVII.—NUISANCE REMOVAL.

SUMMARY OF NOTICES SERVED FOR NUISANCE CASES DURING THE YEAR ENDED 31ST DECEMBER, 1883.

DISTRICTS.	Rooms ordered to be Closed as being unfit for Human Habitation			Rooms Whitewashed, otherwise Cleansed and Repaired			Overcrowding			Dilapidated Yards and Passages Repaired			Dirty Yards, Passages, Staircases, &c., Cleansed			Defective and Badly Constructed Drains and Sinks Cleansed and Repaired			Defective Water Spouts Repaired and Renewed			Water Supply			Water-Closets Cleansed and Repaired			New Water-Closets			Defective Ash-Closets			New Ash-Closets			Privies and Ashpits Altered and Repaired			New Privies and Ashpits			Swine and other Animals Removed			Offensive Accumulations, &c.			Smoke Nuisance			Other Nuisances			TOTAL		
	Informal*	Formal	Total	Informal	Formal	Total	Formal	Informal	Formal.	Total	Informal	Formal	Total	Informal	Formal	Total	Informal	Formal	Total	Informal	Formal	Total	Informal	Formal	Total	Informal	Formal	Total	Formal	Informal	Formal	Total	Informal	Formal	Total	Formal	Informal	Formal	Total	Informal	Formal	Total	Informal	Formal	Total	Informal	Formal	Total	Informal	Formal	Total
No. 1 ...	...	1	1	11	32	43	3	20	100	120	6	2	8	109	490	599	...	4	4	4	21	25	34	155	189	9	7	23	30	...	29	173	202	..	...	...	...	5	3	8	4	11	...	11	240	1016	1256
No. 2 ...	3	4	7	14	69	83	48	30	144	174	18	38	56	102	452	554	...	3	3	5	13	18	20	137	157	24	26	76	102	4	19	167	186	...	11	27	38	17	19	36	20	6	6	12	291	1231	1522
No. 3 ...	...	20	20	1	81	82	26	16	155	171	..	129	129	99	526	625	...	3	3	5	45	50	21	161	182	116	3	111	114	26	20	216	236	3	2	5	7	1	22	23	10	6	3	9	184	1648	1832
No. 4 ...	1	8	9	3	227	230	11	3	160	163	...	38	38	35	369	404	...	2	2	...	21	21	3	32	35	5	...	30	30	10	37	333	370	3	...	16	16	6	12	18	3	1	3	4	92	1280	1372
Total ...	4	33	37	29	409	438	88	69	559	628	24	207	231	345	1837	2182	...	12	12	14	100	114	78	485	563	154	36	240	276	40	105	889	994	6	13	48	61	29	56	85	37	24	12	36	807	5175	5982

* By Informal Notices is to be understood communications made verbally or by letter. Formal Notices are those served under the Statutes.

During the past Year 240 connections have been made to the Common Sewer, through Notices from this Department.

TABLE XVIII.

Nuisance Removal.

Magisterial Proceedings.

It has not been found necessary to resort to Magisterial proceedings for enforcing the abatement of nuisances on any occasion during the past year.

TABLE XIX.

1883—RAINFALL, MEAN TEMPERATURE, &c.

1st Quarter			2nd Quarter			3rd Quarter			4th Quarter		
Week ended	Rainfall Inches	Mean Temp. Deg. Fahr.	Week ended	Rainfall Inches	Mean Temp. Deg Fahr.	Week ended	Rainfall Inches	Mean Temp. Deg Fahr.	Week ended	Rainfall Inches	Mean Temp. Deg Fahr.
1883.											
Jan. 6...	0.42	40.0	April 7...	0.00	45.5	July 7...	1.28	61.1	Oct. 6...	1.38	47.8
,, 13...	0.15	39.1	,, 14...	0.00	47.0	,, 14..	0.15	60.2	,, 13...	0.22	52.5
,, 20...	0.36	42.2	,, 21...	0.5	47.5	,, 21...	0.79	53.5	,, 20...	0.41	48.0
,, 27...	0.83	34.6	,, 28...	0.32	44.1	,, 28...	1.44	54.3	,, 27...	0.15	47.3
Feb. 3...	0.77	37.1	May 5...	0.71	41.8	Aug. 4. .	0.65	58.8	Nov. 3...	0.00	47.8
,, 10...	0.43	40.1	,, 12...	1.58	42.7	,, 11...	0.52	57.5	,, 10...	0.37	41.8
,, 17...	0.29	40.8	,, 19...	0.14	51.7	,, 18...	1.43	56.7	,, 17...	0.27	40.2
,, 24...	0.06	45.1	,, 26...	0.01	56.8	,, 25...	0.00	61.5	,, 24...	0.50	40.5
March 3..	0.17	43.5	June 2...	0.07	56.1	Sept. 1...	0.19	59.0	Dec. 1...	0.23	47.0
,, 10...	0.93	35.5	,, 9...	0.03	51.7	,, 8...	1.34	54.0	,, 8...	0.51	38.3
,, 17...	0.49	32.1	,, 16...	0.63	56.5	,, 15...	0.42	54.0	,, 15...	0.13	42.3
,, 24...	0.61	26.5	,, 23...	0.18	53.1	,, 22...	1.43	56.2	,, 22...	1.19	42.0
,, 31...	0.33	36.0	,, 30...	1.85	56.0	,, 29...	0.44	56.5	,, 29...	0.02	42.2
Total...	5.84	Mean 37.9	Total...	6.02	Mean 50.0	Total...	10.08	Mean 37.1	Total...	5.38	Mean 44.4

Total Rainfall during the year 1883—27.32 inches.

Mean Temperature during the year 1883—47.3 deg. Fahr.

APPENDIX B.

Smallpox in Relation to Vaccination.

Return of cases of Smallpox treated in the Newcastle Smallpox Hospital during 1883.

	Confluent.	Died.	Semi-Confluent.	Died.	Discrete.	Died.	Totals. Cases.	Totals. Deaths.	Mortality per cent. to Cases.
Not Vaccinated	21	16	24	2	7	...	52	18	34·6
Doubtful as to Vaccination	...	...	...	...	2	...	2	...	·0
Vaccination reported, but no cicatrix visible	8	8	6	1	2	...	16	9	56·2

GOOD CICATRICES.

Vaccinated—	Confluent.	Died.	Semi-Confluent.	Died.	Discrete.	Died.	Totals. Cases.	Totals. Deaths.	Mortality per cent. to Cases.
1 Cicatrix	1	1	1	...	4	...	6	1	16·6
2 Cicatrices	...	...	7	...	17	...	24	...	·0
3 Cicatrices	3	2	8	...	12	...	23	2	8·7
4 Cicatrices	1	...	5	...	18	...	24	...	·0
More than 4 Cicatrices	1	...	2	...	32	...	35	...	·0
Total good Cicatrices	6	3	23	...	83	...	112	3	2·7

INDIFFERENT OR VERY FAINT CICATRICES.

Vaccinated—	Confluent.	Died.	Semi-Confluent.	Died.	Discrete.	Died.	Totals. Cases.	Totals. Deaths.	Mortality per cent. to Cases.
1 Cicatrix	6	5	7	...	3	...	16	5	31·3
2 Cicatrices	2	2	12	...	14	...	28	2	7·1
3 Cicatrices	...	...	5	...	6	...	11	...	·0
4 Cicatrices	...	...	2	...	3	...	5	...	·0
More than 4 Cicatrices	...	...	2	...	9	...	11	...	·0
Total indifferent or faint Cicatrices	8	7	28	...	35	...	71	7	9·9
Total good Cicatrices	6	3	23	...	83	...	112	3	2·7
Total Vaccinated	14	10	51	...	118	...	183	10	5·5

In addition to the above two other patients, suffering from Smallpox, reported themselves as having been unsuccessfully vaccinated (one once, the other three times), the latter died. Two were vaccinated too late to be protective (one being done on the day before, and the other three days before, taking ill), the former died.

APPENDIX C.

(COPY.)

MEMORANDUM ON REQUIREMENTS OF A SANITARY HOSPITAL FOR NEWCASTLE-ON-TYNE.

Approved by the Sanitary Committee of the Corporation.

GENERAL ARRANGEMENT.

1.—The Hospital to be designed on the pavilion system, and to comprise—

A.—Administrative Department.
B.—Ward Blocks, &c.
C.—Hospital Offices, &c.

The Administrative and Ward Blocks to be disconnected from each other, and so disposed that visitors to one do not pass near the other. Separate entrance to Administrative Department and Ward Blocks to be provided on different sides of Porter's Lodge.

ADMINISTRATIVE DEPARTMENT.

To be disconnected from Ward Blocks by covered corridor, with cross ventilation, and to comprise.—

Ground Floor.—1 sitting room for Medical Officer, 1 sitting room for Matron (with 2 rooms for linen for household and patients), store room, store for patient's hospital clothing, and one sewing room adjacent to Matron's sitting room, office, dispensary (with sink, tap, &c.), kitchen, scullery, larder, dairy, pantry, closets, nurses' dining room, W.Cs., lavatory, &c., wine and spirit stores, cellars.

Upper Floors.—Bed rooms for Officers, 12 single rooms for trained nurses, other bed rooms for 10 persons (assistant nurses, ward maids, scrubbers, and other servants), housemaids' pantry, 2 bath rooms, 2 W.Cs. in offshoot, with cross ventilation.

Bed rooms for nurses and servants to be placed in wings of the Administrative Block, arranged with the view of future additions being made.

WARD BLOCKS (WARDS AND WARD OFFICES).

Six similar blocks for immediate erection, each to accommodate 14 patients, viz., 10 in one general ward, 2 in a small ward, and 1 each in 2 single bed wards.

The general ward to be 26 feet in width; the cubic capacity of all wards to be at the rate of not less than 2,000 feet per bed.

Wards to contain no mouldings, cornices, architraves, &c, on which dust may collect. It is desirable that the angles formed by the floors, walls, and ceiling be rounded off. All wood-work to be of pitch pine. The walls and passages to have a smooth surface and to be coated with impervious material.

LIGHTING.

It is desirable that ward windows should extend as far downwards towards the floor and upwards towards the wall-plate as may be practicable. The general wards to have one window for each bed, including one near each angle of the ward.

At least one square foot of window glass to be allowed for every 80 cubic feet of ward space.

The general wards to have equal window light in opposite side walls, venetian blinds preferably set vertically.

Gas lighting to be on the most approved principle.

VENTILATION.

Window sashes to be under ready control. Other means of ventilation to be provided on the most approved principle.

Fresh air inlets beneath beds; inlet air to be warmed, when required, before entering the ward. Open fire-places in small wards. Ventilators in roof (as exhausts.)

WARMING

To be by steam. All wards to have also open fire-places.

WARD OFFICES.

Each Ward Block to comprise, in addition to wards:—

1.—Nurses' duty room (of say 225 superficial feet area) so placed as to have windows looking into general ward, and (if possible), into small wards.
Duty room to have small kitchen range. Closets, Nurses' W.C.

2.—Ward scullery, sink, slop closets, W.Cs. for patients, bath room, lavatory (three basins), urinal. All of these conveniences to be in offshoots, with cross ventilation between them and the main block.
The bath room to be near entrance to Ward Block, or to have separate door to open air, and to be warmed. Each bath to have at each side a space of at least 3 feet between it and the wall. All cisterns, closets, sinks, &c., to be accessible to workmen from the outside, without passing through wards.

3.—Room for patients' linen, general store closets, closets, cupboards, coal store &c.

4.—Entrance lobby, &c., with small dressing room near entrance, cut off from the air of the wards.

5.—Receptacle for ashes and refuse.

HOSPITAL OFFICES

to comprise:—

Porter's Lodge, of three rooms, and a visitors' waiting room. The lodge to be between the entrance gates for household and patients.

Yard, containing bakehouse, coal and stick stores, store for patients' clothing (not infected).

Stable for three horses, coach house for three ambulances, harness room, cart shed, ofts for bed-stuffing and hay.

Mortuary (remote from house and wards), well ventilated, lighted from roof, with drained cement floor, sink, water supply, slab tables, &c., &c.

Two Laundries (for household and patients) to be worked by steam, drying and ironing rooms. Patients' laundry to have a covered tank, 6 feet x 5 feet x 3 feet 6 inches, outside window.

*Lyon's Disinfecting Chamber.**
*Small Furnace** for destroying beds, infected refuse, &c.

MAIN DRAIN

to be ventilated and arranged to the approval of the City Engineer.

HENRY E. ARMSTRONG,
MEDICAL OFFICER OF HEALTH

Health Department.
Town Hall, Newcastle-on-Tyne,
21st May, 1883.

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* These to be built by the City Engineer.


PLAN
OF THE CITY OF
NEWCASTLE upon TYNE.
1884.
Published by ANDREW REID,
NEWCASTLE upon TYNE.
EXPLANATION.
1883.
NEWCASTLE upon TYNE
PREVALENT ZYMOTIC DISEASES
NOTIFIED BY MEDICAL PRACTITIONERS UNDER THE PROVISIONS OF
THE NEWCASTLE-upon-TYNE IMPROVEMENT ACT, 1882.
SCARLET FEVER
x DEATHS
• Cases not fatal.
N.B. The Areas Tinted Green are the Public Parks and Open Recreation Grounds of the Borough.
Henry F. Armstrong
Medical Officer of Health.


New Benwell
Elswick West Quarry
Parliamentary and Municipal Boundary
Benfield Lodge
Highcross House
West Barn
Miser Hill
Sir W. G. Armstrong &
The King


PLAN
OF THE CITY OF
NEWCASTLE upon TYNE.
1884.
EXPLANATION.
1883.
NEWCASTLE UPON TYNE
PREVALENT ZYMOTIC DISEASES
NOTIFIED BY MEDICAL PRACTITIONERS UNDER THE PROVISIONS OF THE NEWCASTLE-UPON-TYNE IMPROVEMENT ACT. 1882.
SMALL POX
× DEATHS
• Cases not fatal
ENTERIC FEVER
× DEATHS
• Cases not fatal
TYPHUS
× DEATHS
• Cases not fatal
N.B. The Areas Tinted Green are the Public Parks and Open Recreation Grounds of the Borough.

New Benwell
GILL STREET
Parliamentary and
Elswick West Quarry
High Cross House
West Farm
Jews Burial Ground
Episcopal Church
Miser Hill
Cem
Sir W. G. Armstrong & C
T h e
K i n g

CITY AND COUNTY OF NEWCASTLE-UPON-TYNE.

REPORT ON THE RECENTLY INCREASED DEATH-RATE OF THE CITY.

BY THE

MEDICAL OFFICER OF HEALTH.

MR. ALD. WILSON, J.P.,

CHAIRMAN OF THE SANITARY COMMITTEE OF THE CORPORATION.

SIR,

I have the honour to submit herewith a Report on the recently increased death-rate of the City.

That the Report may be of service to the inhabitants and meet with the approval of the Committee and yourself is my earnest wish.

I have the honour to be,

Sir,

Your obedient Servant,

HENRY E. ARMSTRONG,

MEDICAL OFFICER OF HEALTH.

Health Department, Town Hall,

Newcastle-upon-Tyne,

17th December, 1883.

ERRATA.

Page 9, line 1, for "or detail" read "in detail."
„ 11 „ 28, after "known" insert full stop instead of comma.
„ 11 „ 29, after "quarters" insert comma instead of full stop.
„ 13 „ 9, instead of "contributes" read "contributed."
„ 13 „ 11 from bottom, instead of "enters" read "enter."
„ 13 „ 7 „ instead of "is" read "being."
„ 17 „ 25, for "and" read "to."
„ 18 „ 6 from bottom, for "sewerage" read "sewage."
„ 26 „ 3 „ after "Page" read "1."
„ 27 „ 14, for "moisture" read "liquid."
„ 32 „ 7 from bottom, for "undergone" read "had to undergo."

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APPENDIX A.

APPENDIX B.

CITY AND COUNTY OF NEWCASTLE-UPON-TYNE.

REPORT

ON THE

INCREASED DEATH-RATE.

1883.

STATISTICS OF MORTALITY AND SICKNESS.

General Mortality.

THE general statistics of the mortality of the City for the third quarter of the present year, during which the deaths rose considerably above the ordinary number, have already been submitted to the Sanitary Committee in the usual Quarterly Report, a copy of which is given in Appendix A.

The Report in question shows a return of 1,009 deaths, equivalent to a rate of 27·0 per 1,000 population, as compared with a total of 902 deaths, and a rate of 24·4 per 1,000 in the corresponding quarter of 1882; the difference between the two periods being 107 deaths, or a rate of about 2·6.

During the period under report certain diseases stand out prominently as factors of the increased mortality, as the subjoined table shows :—

Measles and Respiratory Diseases.

	Deaths in 3rd Quarter of 1883.	Deaths in 3rd Quarter of 1882.	Excess of 3rd Quarter 1883, over corresponding Quarter of 1882.
Measles	129	5	124
Respiratory Diseases...	138	68	70
Total	267	73	194

A Street List of the deaths enumerated above is given in Appendix B., Table IX.

The excess of deaths under the above heads during the third quarter of the present, as compared with that of the preceding, year represents an annual mortality of 5·2 per 1,000 population.

The deaths from Measles were somewhat equally divided over the quarter. The totals are :—

Westgate*	58
St. Andrew's	8
St. Nicholas'†	3
All Saints'	22
Byker‡	38
Total	129

Of the deaths from Measles in Byker Sub-district, 31 occurred in the last seven weeks of the quarter. A comparison of the numbers in each Sub-district, with those of the previous quarter, is given in Appendix A.

* Including the Townships of Elswick and Westgate.
† Including the Parishes of St. Nicholas' and St. John's.
‡ Including the Townships of Byker, Heaton, Jesmond, and a small portion of All Saints' Parish.

The deaths from Respiratory diseases were spread over the quarter, and occurred in the different districts as follows :—

Westgate	61
St. Nicholas'	11
St. Andrew's	24
All Saints'	10
Byker	32
Total	138

The proportional increase of mortality from the two principal Respiratory diseases in the autumn quarter, as compared with the previous year, is shown in the Appendix B., Table I.

Small-pox and Diarrhœa.

On the other hand, there was a decrease of deaths from Small-pox and Diarrhœa last quarter as compared with the corresponding period of 1882, thus :—

	Deaths in 3rd Quarter of 1883.	Deaths in 3rd Quarter of 1882.	Difference.
Small-pox caused	7	22	15
Diarrhœa	56	118	62
Total	63	140	77

The foregoing are the diseases ordinarily liable to fluctuation in which discrepancy between the returns of the two quarters is most apparent. There are other diseases not commonly subject to much periodical variation in point of numbers, but which constitute good gauges of the sanitary condition of surroundings.

Wasting and other Diseases.

These diseases, viz. :—Scrofula, Tabes Mesenterica, Kidney diseases, Premature Birth and Atrophy, and Debility claim attention from having of late contributed more than their average to the general mortality. The diseases in question are neither infectious nor, for the most part, acute, and therefore the extent of their prevalence during last quarter will be better gauged by comparing it with one-fourth of the corresponding returns of the whole of the previous year, as is done in the Appendix B., Table I.

During the third quarter of 1883, the five diseases above-named have caused deaths equivalent to a yearly rate of 4·6 per 1,000, which is 1·3 per 1,000 above last year's rate from the same causes.

The deaths in question, together with those from Bronchitis and Pneumonia, represent a total rate of annual increase of 30 per cent. above the corresponding numbers for the year 1882, ranging from 14 per cent. increase of deaths from Atrophy and Debility to 206 per cent. increase of mortality from Nephritis and other Kidney diseases. (See Table I., Appendix B.)

The Registration Sub-districts which have suffered most heavily are those of Westgate and All Saints; and next, those of St. Nicholas and Byker. A Table, showing the rates of increase per cent. under each head, together with similar returns for the chief Respiratory deaths in the different districts, is given in the Appendix B., Table II.

The deaths from the diseases above-named during the third quarter of 1883, in each Sub-district at different ages, are set forth in Appendix B. Table III., which shows that :—

Scrofula has been relatively most fatal in children under 5 years of age, and next, in persons aged from 5 to 20 years.

Tabes Mesenterica has been almost limited to children under 5 years of age ; and of these two-thirds have been infants in their first year.

Nephritis, Kidney Diseases, &c., have been chiefly fatal in adults; next, in adolescents and children; and least so in aged persons and infants.

"*Atrophy and Debility*" has been most fatal in infants. Above 80 per cent. of the deaths from this cause having been those of children under 1 year of age. Children between 1 year and 5 years have suffered next in order; and, lastly, aged people. Persons at intervening ages have escaped entirely.

It is not improbable that much of the increase in Kidney diseases has been induced by previous Scarlet Fever. It is also to be observed that diseases of a wasting character (Tabes, Atrophy, Scrofula, &c.) frequently cause more deaths in the autumn than in other quarters of the year. Respiratory diseases, on the other hand, are commonly most frequent and fatal in the spring and winter months.

Pneumonia.

The increased prevalence of Pneumonia during last quarter was much greater in certain districts than in others; thus in Westgate the deaths were equal to an annual increase of 85 per cent., whereas in St. Andrew's and St. Nicholas', there was a decrease of deaths from this cause. This circumstance cannot be explained on the ordinary grounds of coldness of season, &c., but may be due to local circumstances, possibly in the form of sanitary defects.

It is held by some that certain kinds of Pneumonia are the direct expression of the effects of Zymotic poison, rather than merely a condition of simple inflammation of the lungs; and the relatively increased prevalence of the disease in certain parts of Newcastle would appear to support that view.

Street-list of deaths from Pneumonia.

A return of the streets in which deaths occurred from the diseases chronic above-named and Pneumonia, is given in Appendix B., Table XIII.

Age at Death.—The bulk of the increased mortality has fallen upon children. Whilst the total deaths of the third quarter of the present year are equal to an annual rise of above 15 per cent., the deaths of infants under 1 year of age are increased 21 per cent., and those of children between 1 year and 5 years, no less than 90 per cent. over the corresponding rates of 1882. (See Appendix B., Table IV.)

One half of the deaths from all causes during the third quarter of the present year, are those of children under 5 years of age.

Infant Mortality.

The range of rate of mortality of the young in the different parts of Newcastle is striking. Thus, the deaths of children under 5 years of age to total in each Sub-district is:—

St. Nicholas'	31 per cent.
St. Andrew's	44 ,,
Westgate	50 ,,
All Saints'	57 ,,
Byker	64 ,,

Mortality of Newcastle and other towns compared.

Compared with 27 other large English towns* Newcastle, counting upwards, stands as follows:—

	Year 1882.		Third Quarter of 1883.	
	Rate.	Position among large towns.	Rate.	Position among large Towns.
Birth-rate per 1,000 population	37·2	20th	35·2	19th
Death-rate per 1,000 ,,	23·1	18th	27·0	27th
Rate of deaths under 1 year to 1,000 Births	137	12th	211	24th
ANNUAL RATE OF MORTALITY PER 1,000 LIVING:—				
Aged from 1 to 60 years ...	13·9	19th	16·9	27th
Aged 60 years and upwards	77·7	18th	76·8	26th

* Appendix B., Tables V. and VI.

Infectious Diseases Notified.

*Of the Infectious Diseases notified by Medical Practitioners,** by far the most prevalent hitherto has been Scarlet Fever, of which 859 cases have been returned from New Year to 17th November. Of these, 245 were notified during the last seven weeks of the period (Appendix B., Tables VII. and VIII.), or an average of 35 per week as compared with an average of 15 cases per week during the previous quarter. The disease is therefore increasing. The deaths from Scarlet Fever during the last twenty weeks, and at the time of writing, are somewhat over 10 per cent. to cases returned during the same period. It is unnecessary to point out that these deaths are not an accurate statement of the fatality of the cases in question.

Street List.

An Alphabetical Street List of the cases during the past twenty weeks is given in Appendix B., Table IX. During the third quarter of the year the disease was prevalent in the various Municipal Wards in the following order:—St. Andrew's, 46 cases; All Saints', 44; Westgate, 33; Elswick, 31; Jesmond, 24; Byker, 15; St. John's, 4; and St. Nicholas', 2. During the seven weeks immediately following (ended 17th Nov.) the order has been—All Saints', 62; Westgate, 54; Elswick, 53; Byker, 32; St. Andrew's, 27; Jesmond, 15; St. Nicholas', 2; and St. John's, 0.

"FEVER DENS" OF NEWCASTLE.

Accompanying this Report is a Plan of the City, showing graphically the chief centres of infectious disease during the past ten years. Those of each year are distinguished from the rest. Only the worst places of each year are indicated. The prevalence of disease year after year in certain localities, will be recognised at a glance.

Fever Dens.

It is in these "Fever Dens" that the non-infectious prevalent diseases before described have also their strongholds. One of the older established, and formerly the very hottest of these hot beds (New Pandon) has happily been pulled down and buried.

Their locality.

Most of these places are pretty well known. Bentinck, Tyneside Terrace, Mitford Street, Elswick East Terrace, George Street, Blandford Street, Temple Street, Peel Street, Buckingham Street, Pitt Street, Centre Street, Oake's Place, Seaham Street, Hill Street, Stowell Street, Fleece Court, High Friar Street, Percy Court, Liverpool Street, Park Place, Mackford's Entry, foot of Westgate Street, Bailiffgate, Castle Garth, Bell's Court, Low Bridge Silver Street, foot of Pilgrim Street, Church Walk, Dog Bank, Sandgate, sundry streets west of Gibson Street, Byker Bank, St. Peter's, St. Anthony's, *et hoc genus omne*,—they are scattered about the City impartially,—some close to the villas and terraces. Others (*e.g.*) in the neighbourhood of Rosedale Street, Shieldfield, and New Byker, though less notorious, are fast earning a reputation as bad as that of their seniors.†

Disease spread from.

From these dens come charwomen, errand boys, newspaper vendors, seekers after Dispensary letters, mendicants. When the children of the rich are fever stricken in some unaccountable way, how often has not infection been brought thus, direct, undreamed of?

ESTIMATE OF POPULATION OF NEWCASTLE.

The rates of mortality of the City are calculated on population estimated by the Registrar-General, by adding to the population, enumerated in 1881, the proportion of the increase prevailing between the two previous Censuses.

Census.

This estimate presupposes accuracy of Census, but there are possibilities and even probabilities of error in Census-taking, and these tend only in one direction—viz., to omission. The number of inhabited houses at the

* Measles is not included in the List of Diseases to be notified under the Newcastle-upon-Tyne Improvement Act, 1882.

† Of a total of 129 deaths in the City from Measles during last quarter, fourteen, or nearly 11 per cent., occurred in the area of new streets to the south of Shields Road, Byker, indicated by green margin on the plan.

Census of 1881 was 3,804 more than in 1871; or, representing at the rate of 7·2 persons to a house (the rate given in the Tables of last Census), an increase of 27,388 persons to the population, as against an enumerated increase of 16,916, or more than 10,000 below the estimate based on enumerated houses. The Newcastle Census of 1871 was said to be below the reality. But assuming that this was not so, and that the population has since increased at the rate indicated by the inhabited houses, the number of inhabitants would be represented as follows:—

Population estimated on houses inhabited.

Population at Census, 1871	128,443
Ten years' increase in 3,804 houses, at 7·2 persons per house...	27,388
Estimated Population, 1881	155,831
Average annual increase of 2,738 for 2 years	5,476
Estimated number in 1883	161,307

During the twelve years (1871–82 inclusive) the natural increase of the population, *i.e.*, excess of births over deaths, has been as follows :—

Natural Increase of population.

Births registered 1871–82, inclusive	65,626
Deaths do. do.	42,328
Natural increase of Population	23,298

The population, as estimated by the Registrar-General to last mid-summer, is 149,464, or an increase of 21,021 only over the number at the Census 1871.

Rates calculated per 1,000 on a population of 161,307 are about 2 per 1,000 lower than those based on the estimate of the Registrar-General. Thus the general mortality of the City for the third quarter of 1883 so calculated, would be 25 instead of 27 per 1,000.

Need of more frequent Census.

Whether the last Census have been correctly enumerated or not, estimates for intervening years based on previous rates of increase are liable to error, as has frequently been shown. The remedy for this defect is the establishment of a more frequent Census. Without entering into details, it would probably be found advantageous and sufficient for municipal purposes to ascertain quinquenially or triennially the number of persons, male and female, children and adult, in each house, which might be done at comparatively small cost.

Whether the real number of the inhabitants is above the present estimate or not, a large increase in the actual number of deaths has undoubtedly taken place.

SOCIAL CONDITION OF THE POPULATION, AS REGARDS LIABILITY TO DISEASE.

In the Annual Report for the year 1874, special weight was attached to two characteristics of the population of Newcastle as compared with other towns, bearing on death-rate. The conclusions were based on a comparison of the different classes of people in the large English towns with the average death-rates of these towns during the five years nearest to the time of the Census of 1871 (1869 to 1873). The report stated:—

Poverty and number of children, &c., in 1871.

"This investigation yields the following results with respect to two features having important influence on the death-rates of towns, viz., amount of poverty and number of children. For the five years, 1869 to 1873 inclusive, the average of the annual death-rates of the Borough was 28·2 per 1,000 estimated population. Of 16 large English Towns* two only had a higher average during this period. These were Liverpool, of which the rate was 30·3, and Manchester, of which the rate was 30·1 per 1,000.

* The towns here named are those with which Newcastle is compared in the reports of the Registrar-General, with the exception of Portsmouth, of which the information requisite for calculations similar to the above was not available.

Poor Class of Labourers in 1871.

"With respect to character of population, the Census returns show that of these towns two only had a larger proportion of the poorest kind of work-people. Thus, the number of the Indefinite Sub-class of the Census, *i.e.*, labourers at undefined work, aged 20 years and upwards, in the towns above-mentioned, was at the average rate of 27 per 1,000 population, at all ages. The rate of this sub-class in Newcastle was 32, in Bristol 40, and in Liverpool 47 per 1,000 population respectively. It was lowest in Wolverhampton and Hull, being respectively 8 and 15 per 1,000.

"Comparison of the proportion of children in the populations of these 17 towns shows that three only have a larger proportion of children under five years to entire population. Thus, the average rate in these towns is 134 per 1,000, ranging from 112 in Nottingham to 149 in Sheffield, that of Newcastle being 142, of Wolverhampton 147, and of Sunderland 148.

"In proportion of infants to population, Newcastle is equalled by none of the large towns. Thus, the average number of children under one year of age in these towns is 31 per 1,000 entire population, ranging from a minimum of 26 in Nottingham to a maximum of 40 in Newcastle.

Number of Irish in 1871.

"Among the characteristics of our population one likely to influence unfavourably statistics based on it is the large proportion of that class of native Irish in the Borough whose habits and love for overcrowding render them more than usually liable to sickness.

"In the fifteen* large English towns, viz., London, Norwich, Bristol, Wolverhampton, Birmingham, Leicester, Nottingham, Liverpool, Manchester, Bradford, Leeds, Sheffield, Hull, Sunderland, and Newcastle, the proportion of persons born in Ireland was at the average rate of 42 per 1,000 of entire population. The rate ranges from a minimum of 9 in Leicester to a maximum of 155 in Liverpool. Excluding this last town and Manchester, where the rate was 96 per 1,000, the average rate of native Irish in the remaining 13 large towns is 29 per 1,000.

"That of Newcastle is 53, and is exceeded only by those of the two towns above mentioned, and by that of Bradford, which is 57.

Disease amongst Irish.

"That much of the sickness and death in the Borough is due to the Irish portion of the lower classes already referred to there can be little doubt. The general tendency of the Irish to take in lodgers and to overcrowd their too-often dirty dwellings is matter of common observation, and has been strongly commented on by Dr. Russell, the Medical Officer of Health for Glasgow. To this evil Newcastle is probably more exposed than can be surmised from her comparatively large number of immigrants, since these represent but a small part of the Irish in the town. This view of the case is confirmed by the books of the Newcastle Fever Hospital, in which the nationality of the patients has been recorded for the last eight years, which show that above 17 per cent. of the patients admitted were Irish, against 6 per cent. of Scotch. Excluding the year of the small-pox epidemic, 21 per cent. of the patients admitted to the Fever Hospital were Irish, 7 per cent. only were Scotch during these years, although the number of native Scotch in Newcastle, as shown by the Census, is fully one-third more than that of the Irish. Assuming, then, that the Irish produce the same proportion of deaths in the Borough as cases in the Fever Hospital, the removal of those deaths would reduce the rate of mortality of Newcastle below that of the average in the 18 large English towns during the last five years, or below the average death-rate in any one of these years."

1881 compared with 1871.

To what extent do the social characters of our population at last Census resemble those as above described of 1871 ?

Poor Class of Labourers.

The proportion of labourers is reduced from 32 per 1,000 population in 1871, to 22 per 1,000 in 1881.

Number of Children.

The rate of children living under 5 years per 1,000 population of Newcastle at last Census was 141·4, and of infants under 1 year 30·5. The former of these rates is nearly the same as in 1871, the latter is 9·5 lower. Both rates are about the average of other large towns.

Number of Irish.

The rate of native Irish in our population is 37·8 per 1,000, being 15 lower than last Census, but still very much higher than other large towns, with the exception of Liverpool, Manchester, Salford, Oldham, Bradford, and Sunderland (Appendix B., Table VI.) This return takes no account of the English-born descendants of Irish parents.

The Irish still continue to contribute largely to the Fever cases admitted to Hospital, the rate being 18 per cent. to total during the past eight years.

A somewhat striking element in the population of Newcastle, as compared with other towns and with the whole of England, is the average number of

* Portsmouth, Salford, and Oldham are omitted from this calculation, owing to the want of the requisite information.

persons to each house, which the Census shows to be 7·2. Of the twenty largest English towns, Plymouth and London only have a higher proportion (9·4 and 7·9 respectively). Sunderland is the same as Newcastle. Other towns range from 4·5 to 6·8, and the mean of England is 5·4 (Appendix B., Table V.) **Large number of persons per house in Newcastle.**

The value of these statistics is doubtful, the discrepancy they indicate is perhaps more apparent than real. It is not clear that the term "house" has precisely the same meaning throughout England. In Newcastle a building let into several tenements, with a common entrance, is called a "house," and probably is counted as such in the Census returns. How far the custom holds in other places is uncertain. Habitations of this kind, occupied by the labouring classes, are very numerous. The actual number of them cannot be stated until after the completion of the house to house inspection now in progress. Seventeen years ago upwards of 15,000 families, or more than 40 per cent. of the entire population, occupied tenements of one or two rooms each, upwards of 9,600 families living in single rooms.* It is believed that improvement in this respect has taken place since the time of the above report. As some indication of this, the average number of families per house was enumerated at 1·5 in 1881 as against 1·7 in 1871; and the number of persons to an inhabited house was 7·2 at last Census as against 7·8 at that preceding. **Number in tenements in 1867.**

The subject of overcrowding of ground and rooms will be considered in a subsequent section of the present Report.

Dullness of trade and consequent want of sustenance have unquestionably told of late on the health of the poorer classes. The influence of the "distress" in this district a few years ago is probably still telling constitutionally on both adults and children. The means of comparing the number of recent applicants for parish relief in the different English towns is not available as a criterion of the relative degrees of want and poverty in Newcastle and elsewhere. Doubtless intemperance, also, has been as usual an important cause of disease. The returns of death give no trustworthy indication of the extent to which drink operates against health, the cases entered as due to Alcoholism or Delirium Tremens, &c., being only an infinitesimal proportion of those primarily due to intemperance, but not so registered. **Trade.** **Intemperance.**

CONDITIONS TO WHICH THE INCREASED MORTALITY IS ATTRIBUTABLE.

From the first section of this Report it is evident that since midsummer sickness and mortality have been unusually prevalent. To what is this due? **Causes of increased Death-rate.**

Diseases of two kinds have been prominent, Epidemic and Endemic.

Every epidemic in a district depends on conditions acting either generally and coming from without (extrinsic), or on others acting locally and generated on the spot (intrinsic), or on a combination of these conditions. **Epi- and Endemic.**

The idea of the purely *extrinsic* origin of febrile diseases is unsound in theory, fatalistic in principle, and mischievous in practice. It teaches that man is the sport and pastime of "waves of disease" coming from nowhere, which he cannot control, and to which he may as well submit. A few years ago it would have been made to account for outbreaks of human sickness which we now trace with ease to the consumption of trichinous pork, infected milk, and so on. It fails to explain why year after year the slums and rookeries of towns suffer heavily from the more constantly recurring epidemic diseases, while other parts generally escape, or why in the more rare visitations of Cholera the entire population of town and country alike have not been submerged. It leaves out of consideration the element of susceptibility or insusceptibility of population to infection.† **Extrinsic Causes.**

* Report of the Public Health Committee, 6th March, 1867.

† The apparent tendency of Scarlet Fever to remain comparatively quiescent for five or six years, and then break out severely, is, doubtless, largely due to the small proportion of susceptible children existing after a given epidemic until others spring up to form a fresh harvest for the reaper.

The constant recurrence of epidemics of certain kinds at particular seasons of the year, and greater prevalence in some years than in others, are no more arguments in favour of the "wave theory" than the ripening of fruits in due season or a superabundant harvest. Temperature, moisture, and other meterological conditions, are to the germs of some diseases precisely what they are to the grain of the agriculturist. The farmer knows that his prospects of harvest depend on the weather. He knows also that there will be no crop unless the seed has been sown. So it is with Fevers. These also spring from seeds, or what may be so termed, which, given a suitable soil, temperature, and moisture, will flourish and multiply each after his kind. The soil of Fever germs is the body and tissues of a susceptible person, and their fertilizers are dirt and impure air. There is one important distinction between agricultural and morbific seeds, and that is their behaviour under the influence of light. The former thrives in the sunshine : to the latter it is death.

The theory that infectious fevers arise solely from conditions acting locally, such as organic decomposition, implies the origin *de novo* of these fevers, and fails to explain various phenomena, as *e.g.* the action of such condition at one time and not at another.

The most probable explanation is that the causes of such diseases are both extrinsic and intrinsic, acting together.

According to the germ theory, a case of infectious fever never originates anew or spontaneously, but comes always from a pre-existing germ or seed, as ordinary fruits do. This theory agrees with and explains the different phenomena of epidemics.

The germ is ordinarily one of the conditions of disease intrinsic to the district affected, but in the case of infection conveyed from other places, as on clothing, &c., may, like the seeds of ordinary plants, in the first instance, be extrinsic, or may, for convenience, be called so. With this exception, there is no evidence that epidemics are affected by any other purely extrinsic cause than *weather*, or that even this acts in any specific way on them. In farming and fever-breeding, seed, soil, fertilizer, and weather, are all necessary to the production of crop.

The term "epidemic" has been long in use, is convenient, and will continue ; it is nevertheless objectionable ; it conveys the false idea of something exceptional and specific having come into play. Its meaning (*epi* upon, *demos* the people) is confused, vague, and elusive. Attempt its definition and you get no result that would not apply equally to a colliery explosion or the late Sunderland Music-Hall accident.

Fever-crop preventible.

An outbreak of fever, whether on a large or small scale, is simply a number of individual cases or units. Like so many grains of corn, each is capable of producing others, *and may be prevented from doing so.* Until this idea is properly grasped by the public, a national attempt to cope with such diseases on sound principles can hardly be hoped for.

Intrinsic Causes.

The *intrinsic* conditions of infectious disease include the causes of illness in the individual. These are usually divided into *pre-disposing* and *exciting.*

The former of these heads includes influences which lower the vital powers and make the individual liable to disease of any kind. Under some of these causes the germs of fevers, &c., appear to gain special force and virulence. Certain conditions predispose to all infectious, and some non-infectious diseases, (such as Atrophy and Debility, Convulsions, and several others), whilst they directly excite the latter. Exciting causes are those which give immediate rise to disease, as for example, contagion. Certain of both classes of causes come within the province of the Sanitary Authority.

Before submitting for consideration or detail his views as to the different causes of disease operating in Newcastle, the writer has to express his disapproval of the precipitancy of those who fix all the blame on isolated known sanitary defects, and expect him to do the same. The preventible causes of disease among us are too many to be disposed of in this summary manner. In the interest of public health such a procedure cannot be too strongly condemned.

Causes of disease are numerous.

PREVENTIBLE PREDISPOSING CAUSES OF DISEASE OPERATING IN NEWCASTLE.

These may be summed up in a few words as :—

1.—Filth (substantial and atmospheric).
2.—Water (insufficient use of, contamination, &c.)
3.—Dampness.
4.—Ground-crowding.
5.—Sanitary defects of streets and vacant spaces.
6.— Do. business premises.
7.— Do. schools and places of public resort.
8.— Do. private dwellings.
9.— Do. tenement dwellings, room-crowding, &c.
10.— Do. common lodging-houses.
11.—Occupation (unhealthy).
12.—Adulteration or unwholesomeness of food, drink, drugs, &c.
13.—Facilities for disposal of the dead.

(1.)—FILTH.

Of all insanitary things within the scope of the Sanitary Authority, Filth is by far the most dangerous and the most difficult to deal with. It is an agency of such varied form, and among certain people and classes so universal in its operation, that few beyond experts have any adequate idea of its extent, whilst to others, from familiarity, it has almost come to appear inevitable, or a matter of course. If this statement should appear overdrawn, the following details will probably be found an ample justification of it.

Filth dangerous.

The three forms of filth, solid, liquid, and aeriform, are for present purposes practically the same or inseparable. Thus black smoke is solid matter in the air; effluvium nuisances, as sewer gases, &c., are due to stinking or decomposing solids or liquids, and so on.

Three forms of Filth.

Filth, as it prevails, may be considered first under the form of—

Public Nuisances.

The following list comprises most of the different businesses or processes of trade carried on in Newcastle liable to cause public nuisance :—

Slaughter-houses and Triperies.
Cowhouses.
Stables.
Pigstyes.
Bacon Curing.
Fellmongers' Yards.
Tanneries.
Leather Works.
„ Japanning Works.
Fat Melting.
Dip Candle Making.
Soap Works.
Blood Preparing Works.
Sausage Skin Preparing Works.
Sausage Making Works.
Artificial Manure Works.
Brick Works.
Potteries.
Knackers Yard.
Gas Works.
Chemical Works.
Rag and Bone Stores.
Town Refuse Depôts, Made Ground, &c.
Factories.
Steam Mills.
Breweries.
Bakeries.
Tobacco Pipe Works.
Fish Curing Works.
Rabbit Skin Stores.
Carpet Beating Depôts.
Collieries.

Other places liable to make black smoke.

Dye Works
Glass Works.
Oil Works.
Bottle Works.
Grease Works.
Lead Works.

Street-sweeping in dry weather.

The greatest nuisances, *i.e.* as respects kind and gross amount of filth and total number of places in proximity to human dwellings, &c., are those arising from the first four items on the list; to these, and more particularly to the two first of them, special attention is desirable.

Slaughter-houses. Number.

Slaughter-houses.—There are in the City 145 Slaughter-houses and Triperies, nearly all of which are in regular use. Speaking generally, they are unfit for the purpose, many are in sheds, outhouses, and dilapidated structures, made of improper materials, situated in closely confined neighbourhoods, backyards of houses, and other out of the way places; several are close to, others abut on, and one or two are beneath, human dwellings. With the exception of the old and new blocks in Low Friar Street and those at the Cattle Market and Stepney, the Slaughter-houses are distributed irregularly over the City.

Defects.

As a rule they are dirty and badly supplied with water, which is frequently laid on by meter, a premium for the economical use of it. The refuse is sometimes allowed to remain on the floors of the houses for days before removal. The blood, in all except the Low Friar Street blocks, is allowed to flow into the sewers, to the detriment of the public health, and also to the waste of much valuable material. From their scattered position, it is impossible to keep the Slaughter-houses under proper surveillance, consequently they afford facility for the slaughter and sale for human food of unsound meat. A special inspection gave the following results:—

	Percentage to Total Slaughter-houses.
Within 20 feet from Dwellings	25
Not clean	28
Ventilation defective	20
Imperfect repair	20
Water not inside the Slaughter-house	36
Drain defective	30
Direct communication with Sewer	80
Drain obstructed...	8
Walls partly or wholly made of Wood	15
No Fasting-house	65
Fasting-house not separate from Slaughter-house ...	18
No garbage receptacle	53

The butchers cannot be held altogether responsible for this state of things, which is nothing short of abominable, and, like wisdom, crieth in the streets. They have no other places, and what they have are not such as to encourage cleanliness. Slaughter-houses of this kind are very offensive, and a common cause of disease.

The Slaughter-houses should not be allowed to continue where they are, but should all be removed out of the City.

Need of Abattoirs.

The erection of Public Abattoirs by the Corporation is the only remedy for this large sanitary evil. At the present time the Sanitary Committee are prevented from dealing summarily with many of the worst slaughter-houses by the fact that to cause them to be closed would merely be a shifting of the nuisance.

An abattoir should be as far as possible from the centre of the town, isolated from dwellings, on elevated site (bank of river, &c.), impervious to soakage from animal liquids, and copiously supplied with water and fresh air.

It should also be supplied with lairs for cattle-houses and apparatus for the convenient slaughter of cattle, dressing, and moving of carcases after the American or Parisian methods, vats for rendering fat and treating offal before decomposition can set in; covered trucks for manure, &c.; means of converting blood into albumen, &c., &c., and should comprise lodge for gate-keeper, offices, receiving yard for cattle, rooms for butchers, &c.

The sanitary advantage of an Abattoir are— **Their advantages.**

1.—Removal of nuisance from dwellings.
2.—Exclusion of putrefiable matter from sewers.
3.—Protection of meat from liability to exposure to foul emanation.
4.—Limit to traffic in diseased meat.

The economic advantages are—

1.—The meat is less liable to "spoil."
2.—The blood and offal are saved.*
3.—Saving to the public from order, proper division of labour, avoidance of transportation, and the doing of business on a large scale.
4.—Abattoirs yield a fair profit. That at Bradford is said to pay 6 per cent., and that at Birkenhead 5 per cent.
5.—The ground now covered by private slaughter-houses and surroundings will increase in value.

Apropos of the subject of butcher's meat, the flesh of animals affected with certain diseases† is maintained by butchers to be innocuous, and cannot, in the present state of science, be proved to be otherwise. Although not peculiar in appearance, such meat would not be bought by anyone who could get sound beef or mutton, unless it were offered at a lower price.

Need of Classification of Meat.

The purchaser is entitled to know whether or not the meat he buys is, or is not, derived from a sound, healthy animal. Hence all butcher's meat should be classed and offered for sale accordingly.

Diseased Meat sent from the country.

It is a common practice for farmers, &c., to send for sale to Newcastle carcases of meat, dressed, and cut into quarters. Meat of this kind is generally such as cannot be disposed of in the district where the circumstances of the slaughter (or death, as the case may be) of the animal are known, as the offal and parts which would shew existing disease are not forwarded with the quarters. Sanitary officers are deprived of the means of judging properly as to the quality and fitness for food of meat so sent to town. Such practices should be prohibited. Every carcase sent into market from the country should have the viscera attached, and should be certified by a Veterinary Surgeon or other competent persons as having been slaughtered in the usual way, and whilst free from disease.

Cow-houses. Number.

Cow-houses.—There are in Newcastle 156 Cow-houses, containing 852 cows for the production of milk for sale. These, like the slaughter-houses, are to be found in all parts of the City, the chief aim in their position being apparently to have them as near the dwelling of the dairyman, and, consequently, of other people also, as possible. The droppings on the public streets from the cattle on their way to or from the Moor, and on the premises of the dairyman, is an offensive nuisance.

Nuisance from.

The Cow-houses generally are not kept clean either as regards removal of dung, flushing, or limewashing. On an inspection a water tap and hose-pipe in the interior of a cow-house comes as a surprise.

The drains of some, as for instance at New Mills, are very bad or conspicuous by their absence; and in all cases where they act, a large amount of solid filth is carried by them into the public sewers. The dung-pits are commonly large and uncovered, so that their already sloppy contents are exposed to the action of sun, rain, and wind. Soakage into the earth of the more liquid part of the manure, from want of cementing of the dung-pits, is seldom provided against. The storage for weeks or months together, in back streets and confined places, of the dung of 850 Cows, gives rise to a large amount of noxious effluvium. It is impossible to show definitely the extent

* The blood of each ox is worth about 4s. The Parisians save the blood, but the English seldom do so. "They manage these things better in France."

† *e.g.*, Tuberculosis, Rot, &c. The Jews do not eat the flesh of any unsound animal.

Fever prevalent near Cow-houses.

of the sanitary evil of the Cow-houses, but this is certain, that nine of the principal "Fever Dens" are in districts where Cow-keeping abounds. Thus—

	Byres.		Cows.
In Panmure Street there are	5	contng.	32
„ Rendel Street there is	1	„	17
„ Tyneside Terrace there is	1	„	19
„ Stowell Street there are	4	„	14*
„ Liverpool Street there are	4	„	16
„ Area between Hill, Pitt, and Diana Sreets, and Pit Lane there are ...	14	„	70
„ Lower part of Gallowgate there are ...	12	„	50
Behind Prudhoe Street there are	2	„	13
In St. Anthony's there are	2	„	9
Total	45		240

Other "Fever Den" areas, *e.g.* Back George Street, Little Blagdon Street, Cut Bank, &c., are in a minor degree Cow-house areas.

The Cow-house Nuisance has grown with the town, some of the above-named places that were in the fields half, or even a quarter, of a century ago, now house people at the rate of from 200 to 400 to the acre.

Cow-houses should be removed to Suburbs.

The Regulations under the Dairies' Order have had some effect in preventing the establishment of new Cow-houses in very unsuitable localities, but as licenses for existing Cow-houses are not required, it is impossible under existing powers to deal satisfactorily with the old ones. This can only be done by providing public Cow-houses in the suburbs and abolishing those in the neighbourhood of populous streets.

Stables.

Number.

Stables.—There are, on a rough estimate, nearly 500 stables, large and small, in different parts of Newcastle; many of these are, as every one knows, in the occupation of persons in good social circumstances where cleanliness and fair sanitary condition are the rule. Stables of this class are usually within a short, and in the case of places like Eldon Square, a very short, distance from dwellings. Under such circumstances stable-holders are in the habit of enduring the effluvium from their own horses with an equanimity seldom shared by their neighbours, whose complaints to the Health Department are sometimes loud; imagine, then, what must be the nuisance from the miserable shelter of the poor man's horse, where the urine stands in pools until it dries up or soaks into the earth, and the manure for want of a dung-pit lies in the lane.

Nuisance from.

Pigstyes.

The Pigstyes, offensive though they are in comparison with the foregoing nuisances, are of no great account. There are 49 of these, all of which, except in the case of farm-houses, are kept at a distance of fifty yards from dwellings.

Nuisance from.

It may be said that if animals are kept in the offensive state described, their owners are liable to penalty. This is so, but there is almost as much difficulty in obtaining a conviction against the keepers of dirty stables or cow-houses as in making some people keep themselves clean by Act of Parliament.

Nuisance from Trades, &c.

After the keeping and slaughtering of animals and the dressing of carcases for food, the next classes of trade giving rise to effluvium nuisances are those concerned with the storage, preparation, or manufacture of animal substances into articles of commerce: the foregoing list names some fifteen different businesses or processes of trade carried on in Newcastle under this head. In total number the different works are barely a tithe of those connected with the keeping and slaughter of cattle, and the nuisance from them is proportionally still less. Some of those connected with the

* Formerly many more.

Preparation of Hides and Skins are carried on without much cause of complaint, and one in particular is a model of its kind. There have been at different times a great many complaints of others, especially one in the centre of the town, now closed, which was carried on in such a dirty way as to be a nuisance to thoroughfares and streets, houses and shops, &c., within a radius of two hundred yards. The processes of trade as carried on at this establishment were particularly offensive. The tannery in question was situated within a short distance of Stowell Street, one of the "Fever Dens" of the City, to the insalubrity of which it contributes greatly. **Tanneries, &c.**

Tallow Melting is one of the most offensive trades with which the Sanitary Authority of Newcastle has to deal. Fortunately there are not many of these works in the City; the most offensive was one located in the neighbourhood of Low Friar Street, also a "Fever Den" area. The works were vacated not long ago. The business, which has recently been resumed to the great annoyance of the neighbours, and without sanction, has been prohibited by the Sanitary Committee. The smells from this place were sickening, and were perceptible a long way off. **Tallow-melting.**

The foregoing are the different trades or businesses connected with animals or animal substances liable to affect the public health. From their number and situation it is obviously impossible to keep them all under proper sanitary supervision. There has for years been a regulation in force in Newcastle prohibiting the keeping of swine within a specified distance of human dwellings, and the tendency of public opinion is strengthening towards the abolition of private slaughter-houses in populous localities. Hitherto the old existing cow-houses, tallow-melting works, &c., have been tolerated, and the establishment of each new place has been considered on its merits. Many applications have been refused. Urban Sanitary Authorities should have the power to license and regulate all such trades, and to fix the locality in their district where they shall be carried on. If the Corporation could do this and also provide for the keeping, sale, and slaughter of all cattle outside the City, the sewers, streets, and atmosphere would be freed from a vast quantity of noxious matter and a great hygienic boon would be secured to the inhabitants. The production of **Need of power to fix locality, in which Offensive Trades should be carried on.**

Black Smoke is probably the most general nuisance arising from the remaining trades on the list; it comes from factories, steam mills, breweries, bakeries, tobacco pipe, and other works. In justice to the proprietors of such works it must be stated that there are towns at no great distance where the non-consumption of smoke is much more evident than it is here; the atmosphere of some parts of Newcastle is also polluted by the steamers on the river to a greater extent than by the works of the citizens on shore; these last, nevertheless, cause an evolution of fuliginous matter that is not only detrimental to health but is an immense and totally uncalled-for waste of fuel. Proof of this anyone may have for himself who will take the trouble to watch the furnace chimney at the leather works of Messrs. E. & J. Richardson, Low Elswick. Here the fuel for the heating of each of three large steel boilers is burnt in an Adamson's Smoke Consuming Furnace; so effectual is the combustion that flame and hot air only enters the tubular cavity of the boiler entirely devoid of smoke, so that by means of a glazed eyelet at the end furthest from the fire, the observer may see clearly from one end of the boiler to the other whilst the furnace is in full operation, not a sign of smoke is visible from the top of the chimney. These smoke consumers have been in use about two years, and Messrs. Richardson state that they have given complete satisfaction. **Smoke-Nuisance. may be prevented.**

If these apparatus were in general use by manufacturers we should hear little about the smoke nuisance. **Cause of Smoke-Nuisance.**

The indifference of smoke producers is sometimes the result of the knowledge of the difficulty of conviction and the lightness of the penalty. The

writer was once told by one of the largest smoke producers in Newcastle that he found it more worth while to pay an occasional fine than to be at the inconvenience and expense of putting in fresh apparatus. It is matter of common knowledge that in the absence of special appliances, black smoke may be prevented by a good stoker. Employers, who will, may act on this knowledge, but in the case of others, and indeed in all cases, the licensing of the stokers would make them more careful.

Brick-works. *Brick Works* are generally in the outskirts. The nuisance is chiefly due to the character of the fuel employed, and is in certain directions of the wind offensive to the occupants of houses at a considerable distance.

Gas-works. *The Gas Works* are now the cause of less nuisance than was the case a few years ago. Still, in southerly directions of the wind, the inhabitants suffer from offensive effluvia, probably for the most part due to accumulation of spent lime at the works.

Chemical-works. *Chemical Works*, though abundant on Tyneside and often polluting the air of Newcastle, cannot be classed among the nuisance-causing trades carried on extensively in the city.

Refuse-depots. *Town Refuse Depôts* will be referred to in a later part of this Report.

Carpet-beating. *Carpet Beating Depôts* in the neighbourhood of dwellings are sometimes offensive both from dust and noise, and have been the cause of complaint. Two only of these establishments in the city are known to the Health Department. Carpets sent to such establishments from houses after fever doubtless lead to the spread of infectious disease.

In Paris, carpet-beaters are confined to a certain part of the city. In New York,* the nuisance is reduced to a minimum by an ingeniously contrived apparatus, by which the heavier dust is deposited and the floating particles are made to pass through a fire.

It will be admitted that any nuisance from the depôts in question is small in comparison with that from the dusting of carpets in streets and lanes by domestic servants and others, or from

Street-sweeping. *Street Sweeping* by revolving brushes. In dry weather this very necessary process as commonly performed, fills the air with clouds of fine dust more noxious than the heavier particles it removes. This might be obviated, or at least lessened considerably by covering the brush with a hood to prevent the lighter particles from rising into the air; as an alternative it might be found practicable to keep the bristles of the brush constantly moist by water supplied along the axle, or the streets might be sprinkled before the brush passed over them. Any of these methods will probably be found effectual.

Nuisance may be obviated.

Public Nuisances and "Fever Dens." Before leaving the subject of Public Nuisances as predisposing causes of disease, it may be stated that eight of the "Fever Dens" indicated on the map are also situated in areas where businesses or trades causing such nuisances are carried on somewhat actively. Thus:—

In Back George Street there are	2 Bakeries. 2 Stables. 1 Dye Works.
In Tyneside Terrace	1 Gas Works. 3 Stables.
In Gallowgate	1 Fellmonger's yard. 1 Tannery. 2 Factories. 1 Steam Mill, &c.
In and near Low Friar Street	1 Tallow Melting Works. 1 Dip Candle Works. 1 Soap Works. 2 Blood Preparing Works,† &c.,

* Article on Public Nuisances by Roger S. Tracey, M.D., in Buck's *Hygiene*, Vol. II.

† These were both in operation at the time when Fever was prevalent in the locality. One has since been vacated.

In Seaham Street, Pitt Street, Pitt Lane, &c. ...	1 Colliery. 1 Fish Curing Works. 1 Brick Works. 1 Chemical Works. 1 Marine Store Depôt.
In Bell's Court, Pilgrim Street	1 Factory. 1 Tobacco Pipe Works. 1 Rabbit Skin Store.
At St. Anthony's	8 Pigstyes. 1 Factory. 1 Chemical Works. 1 Lead Works. 1 Pottery.

Continuing the account of the various predisposing causes of disease we come to the consideration of the general subject of—

THE REMOVAL OF NOXIOUS REFUSE.

Refuse-removal.

Here the material is of two kinds, liquid and solid. The insanitary effects of the two are pretty much the same, but there are important distinctions between the ways in which they act, and each has to be dealt with by a different method. It is most convenient therefore to treat them separately.

Liquid Filth includes the contents, or what should be such, of drains and sewers.

Sewage-removal.

It is unnecessary at the present day to advocate the rapid removal of sewage. Stagnant sewage is universally admitted to be dangerous and not to be tolerated in or about human habitations, but to be removed forthwith as far as possible from them. The ill-effects of sewage on health are due to sewer-air, a compound of the gases resulting from organic refuse in decomposition, mixed with more or less of ordinary atmospheric air, and in urban populations, seldom free from specially infective material. In the removal of sewage it is necessary to see that sewer-air does not find its way into the dwellings, &c., from which the sewage was removed. The more freely the air of drains or sewers is diluted with atmospheric air the less noxious it becomes. There are therefore three main objects in dealing with sewage.

How have these been carried out in Newcastle?

How effected in Newcastle.

Drain-defects.

In very many, probably the majority, of instances, they have not been carried out properly. The sewage seldom flows away quickly; houses provided with the ordinary indoor conveniences of different kinds have frequently, nay generally, more or less of direct communication between their interiors and the sewer; the free circulation of atmospheric air in the private house-drains, unmixed with the gases coming from the sewer, is, with very few exceptions, impossible. Different courses have been followed by different constructors, some on one principle, some on another, and some almost on no principle at all. In a word, the main characteristic of the mode of dealing with refuse, liquid and solid, as will presently be shown, has hitherto been *want of system*.

House Drains and their Feeders.

To begin with the subject of drainage at its rootlets, the feeders of the house-drain, *i.e.* water-closets, water-pipes from cisterns, baths, lavatories and house sinks, and yard gulleys. There are in Newcastle 10,750 houses provided with water-closets, and the number of closets to the same is 14,500.* Indoor water-closets are in improper places. If there is a house in Newcastle with a water-closet in complete accordance with the best recognised sanitary principles, to be presently described, it is more than the writer is aware of. The chamber of the water-closet is not even in an off-shoot in perhaps the majority of cases, but within the main walls, sometimes

* Information courteously supplied by the Secretary of the Newcastle and Gateshead Water Company.

near the middle, of the house, where neither the closet or its soil-pipe can be ventilated, and in case of a leakage in the latter the flow of sewer air into the house is unchecked. This is bad in a private house, but it is worse in a tenement occupied by several families,and still more so if the water-supply fails and the closet-basin gets filled with excrement. Such cases are by no means uncommon in the "Fever dens."

The following examples are taken from the Annual Report for 1882 :—

> No. —, Prudhoe Street, a house occupied by three families, reported on as having no "convenience" of its own, the occupants using the water-closet of an adjoining house. The closet in question, which was in the basement and in an unsuitable position, was obstructed and offensive. The Committee ordered that proceedings should be taken against the owner unless the required improvements were carried out The Inspector reports that the works have been done.
>
> At No. —, Wood Entry, St. Ann's Street, one water-closet for a block of eight tenements, and placed under the stairs in the interior of the house. The closet had been fastened up for some time on account of its offensive smell. There was no ventilation to either closet or soil-pipe, and the house was reported to be unfit for habitation from the nuisance and the want of proper accommodation. The Inspector reports that this water-closet has been "repaired and put into proper order." *This is not enough, for so long as the closet remains in its present position and unventilated, the numerous occupants are exposed to danger from liability to escape of sewer gas into their dwellings and nuisance from obstruction.* The difficulty is to find another place for the closet, there being no available space outside the house.
>
> At Scott's Entry, Sandgate, the tenement property belonging to Mr. ——, occupied by seven tenants, was reported to have only one water-closet, which was situated beneath a living and sleeping room. The property, owned by Mr. ——, in the same Entry, was reported to have only one water-closet for the use of thirteen tenants. This closet also was beneath a living and sleeping room. The Inspector reports that in both cases the rooms over closets, and several others, were closed under legal notice.

The foregoing common examples of difficulties encountered by the Inspector of Nuisances show the need of decided and radical action to procure any real improvement in the sanitary condition of some of the old tenement property in Newcastle.

Cisterns and their defects. The cistern of the closet very often has its waste pipe directly opening into the drain, so that sewer air may pass up and contaminate the water which more often than not is also used for drinking and cooking. Several cases of Fever with defects of this kind have come under notice, even in houses of recent construction. Separate cisterns for culinary and water-closet purposes are exceptional.

Soil-pipes. The soil-pipes are rarely provided with adequate ventilation, *i.e.* by pipes of the same calibre. Suggestions to ventilate full-bore, in common with most recommendations on sanitary improvement by structural alteration, are usually met by the owner in a spirit of which economy is the principal feature.

Sinks. Sinks in kitchens, sculleries, floors of cellars, &c., in a large proportion of the houses other than those built within the last four or five years, are not disconnected from the drain, but allow sewer air to pass inwards, only slightly impeded by the "bell" or other easily moveable "trap."

Drain itself often bad. *The house drain is often defective* in material, workmanship, gradient, so that the contents lodge, or worse, soak into the surrounding soil. Defective and badly-constructed private drains and sinks constitute about one-fourth of the nuisances coming under the notice of the inspectors of the Health Department. Excepting a few instances in mansions, where alterations have been carried out during the past year or so, the drain is neither disconnected nor trapped from the sewer, or provided with means for the circulation of fresh air from end to end. In nearly every case the house-drain opens directly into the sewer. Thus the latter, which is public, is ventilated by the soil-pipe, which is private, to the great risk of the tenant, who may, by this contrivance, have the germs of disease from other houses "laid on" to his own.

The above is an unvarnished tale of some of the so-called "sanitary arrangements" of our houses. Cases might be multiplied *usque ad nauseam* of sickness and death where such arrangements obtain. It is no exaggeration to state that one or other of them is present in every house of five years standing that has not been altered under the advice of sanitary experts. It is the opprobium of builders that they first make houses and then make them habitable.

That the foregoing account represents a state of things the importance of which to life it is impossible to over-estimate, will be acknowledged by any one at all familiar with sanitary matters.

Danger of bad drainage not properly understood.

The gravity of the subject is never fully appreciated by the householder until some member of his family is stricken down and he is told too late that it is "the drains." The ordinary builder little knows the mischief his "conveniences" have worked and are still doomed to work. He has not been educated in the principles of modern sanitary knowledge, and it is natural that he should repeat the errors of his predecessors. As a rule builders are ready to avail themselves of opportunity for acquiring and carrying out new ideas bearing on the hygienic aspect of their calling. There is, however, among them a sprinkling of so-called, often self-styled, "practical men" who, declining to listen to the indications of science or the dictates of authority, persistently and incorrigibly follow the lead of a narrow and one-sided experience, and blunder on to the end. And the public pays for it!

The builder.

Need of adoption of a system of house drainage.

What is wanted in respect of private drains of houses and business premises is that the Sanitary Authority should adopt a system, and authorize their officers and see that it is uniformly carried out. Unless this is done, the task of cleaning the augean stable of Newcastle will be endless, impossible. Experience of the need for this comes day after day. As a typical example, Windsor Terrace (see Annual Report, 1882, p p. 32, 33) may be quoted. Tenants learn that the "sanitary arrangements" of their houses are wrong, and come to the Health Department for redress. The owner, after repeated applications from the department to make the necessary alterations says, the requirements are unreasonable, and declines to carry them out unless the tenant will share the expense, to which the latter demurs.

The recommendation of officers, as to structural sanitary alterations required would have more effect if coming as the direct expression of the views approved by the Sanitary Authority.

System recommended.

The subjoined form of notice to builders, house owners, and others was prepared nearly three years ago, together with plan,* showing how this might be done. The whole was submitted to the Sanitary Committee with the object of getting it carried into effect if approved. The matter was referred to a Sub-Committee.

NOTICE.

EXCLUSION OF SEWER GASES FROM HOUSES.

The Urban Sanitary Authority direct attention to the danger to health from the escape of sewer gas into houses having an immediate communication between the interior and the drains.

1.—It is important that all waste-pipes from house-cisterns from sinks, baths, lavatories, or "save-all trays" should be kept apart from, the soil-pipe and discharge over, and at a distance of about eighteen inches from, an efficiently trapped gully grate in the open air, as shown by the general section.

* See Appendix.

2.—Water-closets are best placed when entirely disconnected from the main building, or in an offshoot with means for thorough cross-ventilation (see sketch, fig. 1), and should, if possible, have cisterns separate and apart from those used for storing water for other domestic purposes.

No water-closet should be within the main walls of a house or in such a position as to interfere with the free circulation of air between it and the house; where, owing to structural arrangements these conditions cannot be secured, the closet should adjoin a main outer wall through which the soil-pipe must pass directly from the trap of the closet to the open air, and there be ventilated by a full-bore continuation of the pipe carried vertically or in as straight a line as possible upwards, and having the open upper end in such a position as to allow of the discharge of foul air at a safe distance from any window or other communication with the interior of the house.

3.—Every house drain should be effectually trapped near its junction with the main sewer, and have, near the trap and between it and the house, a grated opening for the admission of fresh air at the lower end of the house drain, for the purpose of affording readier access for cleansing, in case of stoppage of the house drain. It is further recommended that a vertical shaft of 2 feet 6 inches square be built immediately over and leading down to the syphon next the street sewer, as shown by fig. 3.*

Wherever any of the defects above-named exist it is strongly recommended that action be taken to remedy them without delay.

Advice as to the sanitary condition of dwellings may be had from the Medical Officer of Health, and information as to the structural alterations necessary to secure the same from the Borough Engineer.

The drains from cellars should discharge over an open grate properly trapped and placed outside the building, and having a shaft therefrom of at least twelve inches in diameter to the ground level, as shown in the annexed drawing. (See Appendix.)

The system is again recommended. It is founded on the principles laid down in the Model Bye-laws of the Local Government Board.

Sewers need to be put right.

Sewers.—The City Engineer has lately reported generally on the state of the existing sewers, and the want of sewerage in some places.

The Medical Officer of Health has to confirm the statement of the Engineer as to the need of the whole subject being promptly and radically dealt with. There is no doubt that here again the great defect in the past has been *want of system.* Sewers have been laid without proper regard to the houses or business premises that have to drain into them, so as to necessitate the passage of liquid filth under the basement. Many of the principal business streets thus defective are practically irremediable from the very great expense, not to say impossibility, of remodelling the system, owing to buildings subsequently erected at the back of these streets. This error of the past is fully equalled by one of more recent date,—that of irregularity, and want of provision for ultimate requirements, in the sewerage of outlying districts now rapidly becoming populous. Many outbreaks of Enteric Fever in private houses have been traced to faults of this kind. The Inspector of Nuisances frequently reports instances of sewerage regurgitating into cellars and other parts of new houses in consequence of careless laying of sewers, badly made connections, and so on.

* A further improvement is effected by converting the drain into a sloping *open channel* for a distance of about 18 inches or two feet, near this point, beneath the grated opening to the manhole.

Need of plan of sewers and house-drains.

The Engineer refers to the necessity of the plan of all the sewers being fully completed. A perfect plan of every house drain is equally needed. It is frequently found that several houses, instead of draining directly and independently into a sewer in the back street, have a private common drain passing from one house to the other under the basement and then into the sewer. Such a defect is seldom found out until the drain becomes choked, when the entire community is thrown into disorder. An instance of this kind came under notice quite recently.

The observation of the Engineer, that the sewers should be laid by the Corporation, ought to extend to the house drains also.

Sewers should be disinfected occasionally.

It would probably be found beneficial to flush the sewers occasionally with disinfectant solution. This might easily be done by charging street watering carts with the liquid to be used and emptying them into each sewer at its upper end.

Sewers not the sole cause of death-rate rising.

The sewers, though undoubtedly defective, should not be blamed indiscriminately as the sole, or even the chief, cause of the high death-rate. Foul sewer-air is seldom conveyed into houses except through defects on private premises, which it is the duty of the owner to rectify.

Solid Filth.

Solid Filth

may, for present purposes, be divided into two kinds: that from streets, &c., and that from houses and business premises. The former is especially in the Engineer's department, and need not be commented on in this report further than to remark that the street cleansing is now more efficiently attended to than it has been for some years past.

Domestic Filth.

The disposal of the solid filth of houses, &c., constitutes one of the greatest difficulties of practical sanitation. By whatever method it is collected and got rid of, or attempted to be got rid of, there is danger to health on the one hand and expense on the other. This subject would be divested of many of its complications if the houses were all self-contained, for then the power of control of each householder would secure an amount of attention and cleanliness which it is impossible to get when the responsibility is divided over a number of persons as in a court or yard of several tenements.

Evil of conservancy system.

There are however evils attendant on the conservancy system in the neighbourhood of dwellings of all classes, such as to render that mode of dealing with solid refuse highly objectionable under any circumstances. In no other sanitary matter is there greater need of efficiency than this.

Rapid removal necessary.

Methods aiming at reduction of expense are apt in their results to be limited to that end only. In the disposal of refuse, solid or liquid, the first desideratum is rapidity of removal without offensiveness. In this case, economy in disease prevention involves, and almost implies, extravagance in cure.

Want of system in Newcastle

In dealing with solid as with liquid refuse, the same, or even greater, want of method is observable. Nottingham, Manchester, Rochdale, Hull, Halifax, Edinburgh, Glasgow, &c., each has a system more or less its own. In Newcastle there are several ways of storing and collecting refuse, but no definite system, at least none worth the name. It is true that some years ago a great many of the privies were "improved," as an arrangement was termed, which resulted in giving the excrement a greater amount of uncovered surface than before; but with this exception, which happily is no longer being continued, no general principle is adopted. Especially is this the case in tenement property. Here a privy and midden, next door a water-closet, then another privy,—just as different owners have thought fit; heterogeneity is the prevailing feature.

Number of Middens and the Filth they contain.

There are in Newcastle about 20,000 middens, or ash-pits, as they are often euphemistically called. About one-third of these are "privy middens," the greater part of which are open to sun, wind, and rain, and having porous bases, allow of soakage of liquid filth into the soil. 20,000 middens, averaging 16 feet square each, represents a superficial area of 3,200,000 square feet of filth, one-third of which is largely composed of excrement, or, it may

be, infected with the germs of Enteric Fever, to be wafted presently through the window of an adjoining house. In a single heap a tithe or a hundredth part of this filth would raise an outcry. Yet in 20,000 heaps we store it for weeks and months about our doors, and when our receptacles for it will hold no more, we get it shovelled into the back street, where it lies for hours a reeking barbarous abomination till the cart of the scavenger takes it away!

This condition of things cannot be allowed to continue. Mr. Alderman Wilson, as Chairman of the Sanitary Committee, strongly disapproves of it, and his views are shared by most of the Committee. It is therefore to be hoped that this great and pressing nuisance will soon be vigorously and effectually dealt with.

As public opinion on the subject of privy-middens may be said to be still somewhat unsettled in Newcastle, any information as to the sanitary defects of such conveniences may be useful. Before giving an account of the evils of the system it should be observed that persons acquainted only with the privy as found on private premises can have no conception of what a disgusting nuisance it is in tenement yards and slums. In tenement property of this City, privy-middens are the rule. From their structure, character, nearness to dwellings, and the filthy condition they almost inevitably get into sooner or later, occasionally or permanently, they are a moral degradation to the people who have to live near them, and a serious cause of ill-health.

Evils of middens.

The Evils of the Midden Method.—The storage of organic refuse, and especially of night-soil, in the neighbourhood of dwellings for weeks or months is a nuisance and injurious to health, none the less certain in its action because unrecognised by the senses. The liquid contents of the midden soon saturate the brick-work, and in very many instances ooze out on the surface of the yard or back street and, slowly volatilizing, pollute the air.

Enteric Fever.

There is special danger of the spread of Enteric Fever in privy areas, as has been shown in different Annual Reports on the sanitary condition of Newcastle.

The following, for example, is taken from the Report for last year, in reference to the prevalence of Enteric Fever in Byker. Here, with Enteric Fever as with Small-pox, the district most affected is that to the south of Shields Road. Thus in the area bounded on the north by Shields Road, on the south by Norfolk Road, on the east by Headlam Street, and on the west by Dalton Street, 28 cases were reported, or above 17 per cent. of those under notice in the entire City. In this area the privy midden system is in full operation, as the subjoined table shows:—

STREET.	Ash-pits.		Privies.	Ash-closets.	Water-closets.	No. of Houses in Street.	No. of Tenements.
	Covered	Open.					
Shields Road.....	1	44	85	—	—	68	128
Clifford Street	34	8	101	—	—	40	136
Corbridge Street	—	27	25	10	3	101	274
Parker Street.....	67	27	144	4	—	162	390
Conyer's Road	40	42	135	—	2	105	290
Shipley Street...	25	41	101	—	—	73	240
Norfolk Road.....	60	15	113	—	—	139	214
Totals.....	227	204	704	14	5	688	1,672

Middens cannot be disinfected,

It is impossible to disinfect a midden upon which the infected discharges of Fever patients are thrown. The mode of emptying middens is itself a serious nuisance. From structural arrangement some privy-middens have of necessity to be emptied through the interior passages of houses. In tenement property the occupants, finding the midden open and convenient, are in the habit of throwing their slops into it, which can scarcely be wondered at, seeing that the rain falls directly into it, and is also often conducted there from the roofs of outhouses.

and are not adapted for drainage.

The *drainage* of sloppy middens is indefensible. To require landlord to provide beforehand for the discharge into the public sewer of wet from a midden, which should not be allowed to get into it, is bad in principle. Besides, such drains soon choke up and, when in action, foul the sewer.

Fever Dens and Privy-Middens.

The following return shows with tolerable accuracy the nature and number of the different kinds of "convenience" in the "Fever dens." During recent years many of the old privy-middens have been replaced by ash-closets or water-closets. The numbers of these, now and formerly, are shown. In certain districts (*e.g.*, St. Peter's) there are at present more privies than before, owing to the erection of new houses provided with this form of convenience:—

District No. 1.

Street.	Privies.		Water-Closets.	Ash-Closets.
	Now.	Formerly.		
Noble Street	40	88	44	...
Tyneside Terrace ...	...	60	50	10
Mitford Street	...	100	95	15
Elswick East Terrace ...	109	119	8	3
George Street	47	87	30	10
Blandford Street... ...	100	124	10	4
Blenheim Street	100	124	10	4
Temple Street	...	37	30	7
Peel Street	...	26	26	...
Bailiffgate	...	10	9	1
Foot of Westgate Street...	...	6	5	1
Castle Garth	2	11	7	2
Queen's Lane	...	11	5	6

District No. 2.

Bentinck	35	235	300	...
Buckingham Street ...	40	100	4	160
Pitt Street	6	30	15	30
Centre Street	8	16	...	8
Oakes Place	20	25	2	3
Seaham Street	2	20	15	6
Hill Street	1	40	1	40
Stowell Street	30	45	10	5
Fleece Court	16	16	2	2
Gallowgate	10	...	20	..
High Friar Street ...	2	...	50	...
Park Place	2	...	6	6
Liverpool Street	6	14	20	...
Percy Court	...	1	6	...
Mackford's Entry ...	...	3	...	10

Street.	Privies.		Water-Closets.	Ash-Closets.
	Now.	Formerly.		
District No. 3.				
Bell's Court	...	...	16	...
Low Bridge	...	...	9	...
Foot of Pilgrim Street ...	3	4	50	...
Silver Street	2	2	14	3
Church Walk	...	...	4	...
Dog Bank	...	...	12	...
Pandon	...	...	5	2
Buxton Street	...	25	46	7
Gibson Street	6	20	50	4
Melbourne Street ...	3	30	44	...
Blagdon Street	5	10	1	17
Grenville Street	...	...	...	7
Bedford Place	...	...	...	7
Sandgate	...	...	20	...
Rosedale Street	40	40	14	...
Morrison Street	35	35	...	...
Bryson Terrace	35	35	...	...
District No. 4.				
Byker Buildings	7	7	...	...
Leighton Street	10	...	...	10
Leighton's Buildings ...	2	2	2	...
Quality Row	5	5	...	...
Molyneux Street	80	80	...	...
Grafton Street	110	110	...	...
Flora Street	25	...	...	25
Area between and including Shields Road, Norfolk Road, Clifford Street, and Potts Street	700 25	700 25	... ...	... ...
St. Peter's	65	39	11	78
St. Anthony's	50	50	...	...

Their abolition justifiable.

Enough has probably been said to justify the abolition of the privy-midden. But what is to replace it in tenement property? And what are the advantages of the proposed substitute?

W.C.'s not suitable to tenements; dry method best.

The most rapid removal of night-soil is effected by the water-carriage system, but this leaves untouched the refuse from houses, which must be provided for. Water-closets also in dwellings under divided responsibility and control—as in tenement houses—are out of the question. One or other of the different dry methods of collection are admitted to be most applicable for such circumstances, and practically these are of two kinds,—one in which the night-soil is collected separately from the other refuse, the other in which both are deposited inthe same tub or pail, the house ashes acting as a deodorant to the excrement, &c. The first of these methods is in use in Manchester, Rochdale, &c., the latter in Nottingham.

One advantage of Ash Closets.

There are in some parts of Newcastle a number of ash-closets in tenement and other property. These in the limited and imperfect trial they have had, are, in the writer's opinion, a considerable improvement on the privy system. Objections are sometimes made to them, but such objections have always direct reference to defects in the detail of working, and not to the principle involved. Thus: an ash-closet overflowing soon raises an outcry for redress. This is one of the virtues of the system. The old privy-midden may be heaped up for months, but so long as there is room for further deposit not a word of complaint is uttered. An overflowing ash-

closet in a tenement is an indication either that the number of closets provided for that tenement is inadequate, or that the van of the scavenger does not go there sufficiently often, both of which defects may be easily remedied.

The ash-closet system has not yet had a fair trial here, and the practical experience we have had of it, although satisfactory so far as it goes, should not on any account be accepted as a criterion of what under proper management it may become. The following is an account of the system as carried out at Nottingham:*—

How Ash-Closet sytem is worked at Nottingham.

> The closet is of very simple construction; in fact, its simplicity is its great merit. * * * * * * It is provided with good means of ventilation by louvred openings in the roof. In most instances the seat is hinged, and in others the front is movable; in order to allow of the more easy removal of the tub, an opening is often made in the back wall of the closet, behind the seat. This opening is provided with a hinged flap, which can be unlocked by the scavengers when they come to change the tubs. The tub itself is made of oak, and is kept well tarred; it has an outside diameter of 1 foot 6 inches at bottom, and 1 foot 9 inches at top, and a height of about 1 foot 4 inches; the thickness of its sides is from ½ inch to ¾ inch, and it is covered by a metal lid. Bought as they are by contract, these tubs cost 2s. 8d. each, the whole cost of a new closet, including locks and everything, being £4. The pail is removed weekly, or at shorter intervals, according to the necessities of the case, and a clean pail is substituted for it.
>
> It has already been said that the Nottingham pail is a small movable midden-stead. It is, in fact, used as a receptacle for solid and fluid excreta, all the solid vegetable refuse of the house, potato peelings, &c.; also the solid animal refuse, the remnants of food, &c. Together with these vegetable and animal substances, which are partly solid and partly liquid, all the dry ashes of the household are intimately mixed so that the excremental contents of the pail are speedily covered over, absorbed, and rendered inoffensive.
>
> The Nottingham authorities take great pains to prevent the emptying of any slops except the chamber urine into the tubs. In order to ensure this, and to prevent the tubs becoming sloppy and offensive to the users, they insist very rigidly upon good yard drainage being provided. As we have stated with regard to middens, so also is it in every way desirable, for the comfort and sanitary well-being of people, that movable receptacles for the excreta should be as dry as possible, for not only is the splashing of liquid contents very objectionable to the users, but the jolting of pails full of offensive liquid along the roads in course of removal, even when this is effected by means of well-constructed covered vans, is very frequently a source of nuisance. It is these considerations which have induced the authorities at Nottingham not only to prevent, by every practicable means, the emptying of slop-water into the closet-pails, but they have also, in the case of schools and factories, objected to pails, because in such places they would be used for excreta alone without the ashes, which constitute their chief safeguard.
>
> We have already said that on sanitary grounds it is an advantage that the ordinary ash-refuse of a house should cover the midden contents; and the same statement is equally true for the closet-pails, for in this manner not only is the liquid part of the contents absorbed and one of the chief objections to their use removed, but there is also great probability that ashes have much influence in

* "Our Homes, and How to make them Healthy."—Part 17, *Cassell & Co.*

neutralising the results of any decomposition that is going on in the pail. As a matter of fact, there is marvellously little smell about these closets, as may be proved by the experience of thousands of dwellings in Nottingham. Even in the crowded courts, where the closets are necessarily very close together, there is a notable freedom from privy nuisance. With these advantages it is natural that the system should be generally appreciated, and that it should have gained in popularity among the working classes year by year; and it is also not so much to be wondered at that the authorities have encountered no very serious difficulties in their great work of substituting tub-closets for the offensive privy-middens which formerly abounded in the town, and which gave rise to a great deal of preventible sickness.

The sanitary authority has, until very recently, had no other powers to work with than the ordinary provisions of the Public Health Act, and, save in a few exceptional cases, the owners of property have not been subsidised; and yet, within ten years of the time when it may be said that the tub-system was on its trial, they have been able to secure its almost universal adoption in place of the privy-midden system. There are now 24,000 of these closets in the borough. Taking into account those which must necessarily serve the purpose of two or more houses, as is the case in the densely-built parts of the town, this number represents more than three parts of the population.

* * * * * * *

In speaking of the advantages of the pail or tub-closet system whether as carried out in Nottingham or at Manchester, it must, of course, be understood that the whole success depends on the perfection of management, by which the pails or tubs are removed and replaced in a cleanly state at regular and frequent intervals, and by which, in densely-built, crowded, poor districts, closets are regularly apportioned to houses and provided with keys. Without the most rigidly systematic arrangements, and also active and constant supervision in the poor localities of the town, the system is, of course, capable of becoming abused and giving rise to a state of things offensive to the people, and quite as prejudicial to health as the privy-midden system. Nottingham has been fortunate in possessing a Health Committee who have devoted much time to this subject. The results of the improved state of things on the public health have been several times referred to in Reports of the Medical Officer of Health. In a special paper on this subject, which he read at a meeting of the Society of Arts in 1879, he showed that there had been a remarkable reduction in the rate of mortality and sickness from Enteric Fever, consequent upon the substitution of pail-closets for privy-middens.

Advantage of pail-system in Fever, &c.

The authorities of Nottingham have adopted an excellent practice on premises notified as being infected with Enteric Fever. In such cases, special pails, coloured red and charged with strong disinfectant, are provided, and are removed at more frequent intervals.

It is advisable that a block of tenement streets in Newcastle be fixed on where the tub system can be fairly tried, and that the privies and middens in every case in that district be replaced by ash-closets, with arrangement for the removal of the pails or other receptacles, as at Nottingham. (There are several districts where the experiments may conveniently be made). Some idea may thus be formed of the economical and other merits of the system, among which is to be reckoned the gain in yard space from removal of the midden. After having proved satisfactory the system may be extended to other localities.

Filthy deposits in public places.—A common habit among the lower classes in the worst parts of the town, and one which contributes not a little to the pollution of the air of such places, is that of throwing dirty slops, solid animal and vegetable refuse, and night-soil upon the open streetway and street gulleys. In front of many houses the daily emptying of slops is evidenced by the state of the pavement, which is sometimes half-washed from its bed. For this the tenants are not alone to blame. Often the house having no yard the street gulley is the only sink available, and if this happens to be a few doors distant, as the inevitable result, the pailful of slops is thrown on the road-way. Night-soil is put on the gulley grate by people of filthy habits, or by others whose water-closets are out of order. **Filth deposited on streetways, &c.**

It is not within the power of the Inspector of Nuisances to prevent this, so common is it in some localities. The police have instructions to bring offenders before the magistrates, and occasionally do so. Vigilance of the Authority will do much towards checking the practice, but the best remedy is the provision of closets more convenient of access, accompanied by education of the people to more cleanly habits.

Disposal of Solid Refuse.—What should be done with the material removed by the scavengers' carts? **Refuse disposal.**

This great social question has received long and careful consideration at the hands of the Sanitary Committee. Various projects have been proposed and fully discussed. Under the advice of their Engineer a scheme for effectually disposing of the refuse in such a manner as will be satisfactory from a hygienic point of view is now on the way, and will probably before long be brought before the Council for approval.

Whilst the subject is still in progress, the attention of the Committee is recommended to a description of the system of scavenging in Glasgow read at the Congress of the Sanitary Institute at Glasgow in September last.* **Glasgow method.**

In former years a great deal of such refuse was shot into quarries and clayholes, which, when filled up, became eligible sites for the Jerry builder on which to erect "The terrace of the future on the rubbish of the past." †

Too frequently houses are built on such sites without the interposition of a thick layer of solid concrete between the site and the floor. Several instances might be adduced of the prevalance, in houses on "made-ground," of disease attributable to no other cause.

(2.)—WATER (INSUFFICIENT USE OF,—CONTAMINATION, ETC).

(a.)—Insufficient use of Water.—It is difficult to over-estimate, or even to value sufficiently, the advantages of an abundant and wholesome supply of water. Like air, it should be free to all. A great deal more of it should be used for cleansing purposes in and about houses, and in back lanes and alleys, especially in the lower parts of Newcastle, the back slums and "Fever dens." Where structural arrangements of lairs and rookeries deprive the poor residents of their fair share of air and light, they have a double claim to water-supply without stint. He who blames the denizens of these miserable abodes for being dirty, should first be sure that sufficient means of cleanliness is afforded them. The landlord or house-agent, who inveighs against the filthy habits of his poor tenants, should think of the weight of each pail of water to be carried from the bottom to the top of high tenement houses by the women who live in the sky-parlours, and calculate how much he saves by this economical arrangement. After a professional acquaintance of "a quarter of a century" with the lower classes of Newcastle, the writer has to express the deliberate opinion that, *cæteris paribus*, the English poor at least are, neither by habit or nature, dirtier than their richer neighbours. They have not equal means of making and keeping themselves **Water insufficiently used.**

* "The Scavenging of Towns," by John Young, Inspector of Scavenging, Glasgow. See *Sanitary Record*, 15th Oct., 1883.

† Teale, "Dangers to Health."

clean. Besides, cleanliness with the poor is a greater virtue than with the rich. Consider any upper-class person condemned to make his home amid such surroundings as are to be met with in the hovels of Back George Street, the dens of Silver Street, or the kennels of Sandgate! How long would, or could, he retain his self-respect and scruples about personal cleanliness? Then, what excuse is there not for those who have been born and who pass their days there? Strange to say, tidy people are nevertheless to be found even in such places.

Need of taps in tenements.

Water in tenements should be readier of access. There should be a tap on each flat, and a bath should be provided free to each half-dozen tenants. The tenants should not be liable to have the supply cut off if the landlord fails to pay the water-rate. There should also be a fire-plug in each court for flushing, which should be done frequently by the Corporation.

Water supply and its defects; how caused.

Among sanitary defects interfering with the free supply of water to houses may be mentioned some of those connected with plumbing, &c. The chief of these are—thinness and unnecessary exposure of lead pipes, leading to obstruction and accidents from frost; and smallness of cisterns of certain kinds for water-closets. Some of these in common use do not allow a sufficient quantity for flushing purposes.

Effect of inconvenience of access to Water.

That a large amount of disease is due to inconvenience of access to water is unquestionable. That it is due to insufficiency of supply is also true. The latter has of late been in operation in Byker owing to arrangement of pipes, which the Water Company are taking steps to rectify.

Contamination.

(*b.*)—*Contamination of Water.*—The quality of the water supplied by the Company is good. Complaints on this score are generally found to be due to temporary disturbance of the pipes or fouling after delivery. The contamination of water on private premises is a frequent cause of disease, and commonly arises from one or other of the following defects:—Dirty cisterns, from want of covers, &c.; single cisterns for water-closets and dietetic purposes; cistern-waste connected with soil-pipe or drain, and thereby leading to impregnation of the water with sewer air. One common cause of the fouling of drinking water is the prolonged use of domestic filters. Filters should be repeatedly changed or they will render more impure the water passed through them.

on private premises.

Personal cleanliness.

Neglect of Personal Hygiene.—Baron Liebig said that "the actual stage of culture a people has, as a whole, attained may be estimated by their consumption of soap." It would be well if this aphorism were adopted and acted on in our public elementary schools. Habits of personal cleanliness are most easily learnt in childhood, and should be taught in our Board Schools along with other rudimentary principles of hygiene. Children, when not able to have the benefit of a daily bath at home, should have it provided for them at school, as is done in some places. They would then carry home a practical lesson from which they and their parents would benefit.

Dampness.

(3.)—DAMPNESS.

This is due to general and local causes.

(*a*) General.

(*a.*)—*General.*—The rainfall during the third quarter was above the average, being upwards of 10 inches* as compared with a mean of 8½ inches for the autumns of five preceding years, and, exclusive of the wet autumn of 1881, a mean of 7·4 inches for the remaining third quarters of the quinquenniad. Five weeks of the quarter, viz.:—1st, 4th, 7th, 10th, and 12th, were comparatively very wet, averaging above 1½ inches each. The effect of this excess of moisture is shown on the mortality from Respiratory diseases. (Page and Appendix B., Table I.)

(*b*) Local.

(*b.*)—*Local.*—The clayey nature of the sub-soil of Newcastle increases the natural hygrometric condition of the atmosphere. It has been pointed out

* Appendix A., Table III.

to the writer that the evaporation from so large an undrained surface as the Town Moor and Leazes (upwards of 1,100 acres) must add considerably to the dampness of the air of the City, and thus constitute one of the predisposing causes of disease. This condition of things is aggravated by very extensive defects of street-paving, drainage, &c. The Engineer will report on such matters in his department. It may be mentioned, in passing, that the Medical Officer of Health has, from time to time, drawn the attention of his Committee to sanitary requirements in these respects. On one occasion, a list of some 50 unpaved streets in Byker alone was submitted. Under the present Engineer, a large amount of paving, &c., has been done. Thus, in 1881, 51 streets, representing a length of above 5,000 yards were either completed or put in progress.

Causes. Drainage, &c.

The dampness of the air is increased in some places by the collection of moisture on vacant sites and unbuilt spaces. Newly-built houses adjacent to such accumulations of water are frequently damp from such causes. Complaints on this score were very prevalent in Byker not long ago. It is a common practice for builders in Newcastle to erect dwelling houses on ground not covered with a layer of solid concrete or other impermeable material between it and the floor, the building regulation on this point not being absolute. The damp courses of houses are often defective, allowing moisture to ascend the building by capillary action.

Vacant sites, &c.

Many of the yards and courts of tenement property in different parts of the City are damp from want of cementing. A large number have been cemented during the last few years, and are much improved thereby, being now dry and easily kept clean; but a considerable number remain to be done. These are generally the property of owners who—or whose agents—are unwilling to incur the expense of improvements. One difficulty in getting this work done is the following:—In summer, when the weather is dry, the inspector cannot prove a nuisance, and in winter the landlord's excuse is that the cement cannot be laid on account of the frost!

Yards, &c.

(4.)—GROUND-CROWDING.

In Appendix B., Table XIV., is given a return extracted or prepared from the Census Tables of 1881, showing, among other things, the relative gross extent to which the surface is populated and covered with dwellings in different parts of the City. The greatest number of persons to the acre in any parish is 119·2 in Westgate, next 116·3 in All Saints. The lowest is Heaton, 1·6, and next Jesmond, 8·7. The district most thickly covered with houses is All Saints, 15·5 per acre; next is Westgate (14·6). In the figures of the table no deduction is made for parks and open space, which to a large degree limits the value of the table. St. Andrew's, for example, appears with a population of 12·7 and a house-rate of 1·6 per acre, no account being taken of the Moor and Leazes (1,196 acres), which, if deducted, raises the population to 62·5 and the houses to 9 per acre. No attempt has been made in the table to carry out the calculations in other districts so as to show the population on built ground only, as this could not be done with any degree of accuracy. The return is useful as a general rough indication of the amount of fresh air one district gets as compared with others. In each parish or township the ground-crowding varies with every acre. The parishes whose gross densities are high owe this to the most thickly populated streets and alleys of the City. Thus Westgate includes George Street (West and Back), Blandford Street, Buckingham Street; All Saints includes Silver Street, foot of Pilgrim Street, Dog Bank, Sandgate, &c., areas peopled at rates probably ranging from 200 to 500 persons per acre. All of the more notorious "Fever dens" are situated on such crowded ground.

Ground-crowding

Persons per acre.

Ground-crowding in "Fever Dens."

In areas where the houses are closely packed together the general ventilation is impeded. Under such circumstances the requirements of health indi-

Effects of crowding of ground with houses.

cate that the population inhabiting such areas should be more sparse than elsewhere. But the reverse is invariably the case, and the stagnant or feebly circulating atmosphere becomes ten times more inadequate to the necessities of a hundred people when polluted by the expirations and exhalations of a thousand. Hence the tremendous agency of ground-crowding as a predisposing cause of disease. Here we have an easy clue to the prevalence of Tabes, Marasmus, Convulsions, and the host of ills the poor man's child is heir to; well would it be for humanity were bodily ailments the only diseases, such areas bred in him. The following opinions were expressed by the writer in his Annual Report for the year 1873:—

CLOSENESS OF DWELLINGS.

> An important condition affecting vital energy by means of the atmosphere is the amount of air-breathing space enjoyed by each person. This of course depends upon two states of overcrowding, individual and general. * * * * * There is an amout of overcrowding on the large scale, such as no Inspector of Nuisances can deal with, which concentrates the poison of all atmospheric miasmata, while at the same time it robs the individual of the constitutional power to withstand them. * * * * * The townships of Westgate and All Saints have by far the largest population both of houses and persons to space built upon, and it is in those very localities that Scarlet Fever has been most prevalent during this epidemic. St. Andrew's and Jesmond, on the other hand, have the smallest number of houses and persons to built space, and have suffered least. The Township of Byker has suffered rather heavily in proportion from Scarlet Fever; this is probably in great part accounted for by the number of persons and houses to each acre of built space.
>
> In such densely populated places as these, the difficulty of securing a vacant tenement of any kind is great, and to workmen with children (who need fresh air most) more so than to others, since the demand enables landlords to chose their tenants. Hence the labourer without a family often gets the best rooms, whilst he with a large one has to be satisfied with the best he can get, even at the risk of overcrowding his family.
>
> The evil of overcrowding in individual houses and tenements is generally acknowledged. In this Borough the regulations require that every person shall have 300 cubic feet of breathing space in the dwelling he occupies. It is obvious from what has been said that the sanitary action of this regulation must be unequal; that what is a fair amount of house-breathing space for an individual in one part of the town is, by reason of the impurity of the air, from lowness of elevation, or overcrowding on the large scale, absolutely insufficient in another.
>
> The consideration of this question in its social and moral aspect is perhaps inadmissible to the pages of a report on Public Health. It is, however, within the scope of such a report on these grounds to recommend the provision of a large amount of air space both within and around the dwellings of the poor; for as surely as overcrowding is a principal cause of the diseases of nutrition which so greatly swell our death-columns under the head of Atrophy and Debility, so also does it favour in the survivors that defective nutrition and development of brain which leads to crime.

To what extent is ground-crowding under the control of the Authorities? is one of the great social questions of the day. Hitherto the different statutes (Torrens's Acts, the Public Health Act, and the Artizans' Dwel-

lings Act) appear to have in some way failed to supply the necessary power to clear away the blocks of unwholesome habitations from our towns. Statesmen of opposite views in politics agree in this, that other measures are needed.

What is to be done to prevent ground-crowding?

The treatment the subject requires is of two kinds—curative and preventive. The one has to do with the ill bequeathed to the community by its predecessors; the other with that which the community is now creating for itself and will hand on to posterity. The former evil, at present undoubtedly the greater of the two, will not grow but rather diminish; the later increases day by day. Experience of difficulty in dealing with the errors of a past generation should make us wise for our own and for that to come.

Any attempt to discuss the vitally interesting political side of this topic in the pages of a Public Health report would be out of place.

The prevention of ground-crowding in the present and future rests with the authorities, who have power to regulate buildings of any kind. There are not, so far as the writer is aware, statutory powers to restrict the number of families to be housed on a given area, whether in cottages or buildings of a number of storeys. The only regulations in force in Newcastle in reference to the subject of ground-crowding are those requiring that no new street shall be of less than a certain width, and that one-fourth of the site on which every new dwelling stands shall be unbuilt on. So long as these regulations are complied with no limit is put to the number of families to be housed in such dwellings,* or the number of dwellings to be planted on a given area.

Number and size of rooms in some new streets.

Many streets of tenement houses have been built within the last few years, in which the opportunity afforded by this omission in the regulations has been extensively exercised by diminishing the size of the rooms so as to accommodate more tenants on a given amount of ground. The following example of the fault in question was reported to the Sanitary Committee of 1880:—

> *Janet Street, St. Peter's.*—The rooms of the tenements in this street are all very small. The tenements on the first floors have windowed rooms, of an area of 5 feet 3 inches by 3 feet 9 inches, and of a cubic capacity of 175½ feet. These *closets* are likely to be used as bedrooms for children,and are too small for such a purpose.

Locality of new tenement houses.

Under such circumstances, one-fourth only of the site left open is not enough. A return, furnished by the City Engineer, shows that about 58 per cent. of the sites of the houses in flats built during last year are situated in Byker and Heaton, 25 per cent. in Westgate, and 1·6 per cent. in Elswick. Two houses only in flats were built in St. Andrew's, and none in Jesmond or All Saints. Compressed on the south by the river and on the north by the Moor, tenement-building operations are forced laterally east and west, and the home of the labourer is each year removed further from his work,—a change to which there can be no objection, but which is indeed to his benefit, if he is only provided with cheap, quick, and convenient mode of transit from the one to the other.

Need of power to prevent ground-crowding.

There should be special regulations against ground-crowding, and to provide for ventilation in new streets of tenement dwellings—as, *e.g.*, one requiring a gap or break in the line of street, say every eight or ten houses.

Many old, and formerly self-contained, houses in different parts of the City are now let in tenements, for which purpose they are unsuited.

(5.)—SANITARY DEFECTS OF STREETS AND VACANT SPACES.

Street defects.

(*a.*)—*Streets.*—Defects in street-structure are principally confined to the parts of the town erected before the days of building regulations. Here, as in certain other matters, the population is suffering from the ignorance

* Provided the rooms are not overcrowded in the legal sense of the term.

of its ancestors, who, by placing rows of houses too close together, transgressed the laws of health to a degree that nothing short of demolition will rectify.

"Old Newcastle" and "Fever Dens."

In Newcastle, as was lately pointed out by Lord Salisbury,* owing to the want of civil security in former times "the need of economizing space was imperious, and resulted in the same lofty style of building as that which we see in foreign towns." The practice of economy as regards ground-space remained after the need for it was removed, and many very narrow streets have been built since the walls of the town were taken down. Castle Garth, the Side, the different "Chares," Dog Bank, Sandgate, &c., are old and intra-mural; Tyneside Terrace, Elswick Street, Back George Street, the group of streets to the north of Byker Bank, and St. Peter's are comparatively recent, and extra-mural examples of insanitary streets. All are "Fever dens." For the defects of the above-named, and many other, streets as regards ventilation and lighting, there is no practical remedy except destruction of one half of the street, either by the removal of every alternate house on each side of the street, so as to give cross-ventilation on the hit-and-miss principle, or by pulling down all the houses on one side. The courts and alleys of Seaham Street, Gallowgate, Stowell Street, Monk Street, Percy Street, Liverpool Street, Prudhoe Street, Silver Street, Sandgate, etc., should be opened out by sweeping away with unsparing hand the dwellings which interfere with the free access of fresh air and sunlight.†

"Newer Newcastle" and "Fever Dens."

The means by which such improvements are to be carried out rests with the Legislature to authorize, and afterwards with the Sanitary Authority to determine.

Open space.

(*b.*)—*Open Spaces.*—The insanitary condition of houses built on improper sites is a common predisposing cause of disease, especially of the classes to which attention has been devoted in the previous portions of the present report. Such sites, in various stages, consisting of ground "made" by filling up old quarries with refuse, are to be found at the following places:—

Old quarries filled up with rubbish.

Bentinck Road (quarry).
Durham Street (quarry).
Bell Street, Douglas Terrace, etc. (Grove's quarry).
Campbell Street (quarry).
Pawton Dene.
Ground near Eskdale Terrace.
Battlefield (clayhole).
Dunn's Buildings, Byker (clayhole).
St. Lawrence (open ground).
St. Peter's (open ground).

The above places have all been more or less used for improper deposits during the past ten years, and some are still being so deposited in or on. The chief contributor to these has been the Corporation when at a loss how to dispose of their town's refuse.

Improper deposits or "Made-ground."

Since organic refuse from roads, houses, and shops has formed a large part of such deposits, it is not surprising that numerous complaints have been made about them. On one occasion the "ground" in process of "making" took fire, and was not put out without much difficulty and a lapse of some weeks. That ground is now built on, and the houses have been occupied for a considerable time. As a specimen may be quoted the following report, which was made to the Sanitary Committee in November, 1881:—

> On the 21st inst., in consequence of a complaint received, the Medical Officer of Health visited the old quarry (known as

* "National Review," November, 1883.

† "The degree of light in a court almost determines its respectability."—*Bristol Commissioners.*

Grove's) near Bell Street, Arthur's Hill, and found that a large quantity of soft, moist organic matter of various kinds had recently been deposited there. These deposits consisted partly of shop refuse, but chiefly of what the man in charge appropriately called "street muck." Deposits of this kind have been frequently complained of, and have been strictly forbidden by the Committee. On various occasions, on the order of the Committee, such deposits are reported as having been removed from this quarry and other places.

The Inspector was instructed to serve notice for the immediate removal of the material referred to on the present occasion. As there is abundant facility for covering up offensive matter with dry innocuous material brought to the quarry, it is impossible to know certainly whether this notice is complied with. In the interests of health it is important that such deposits should be put a stop to.

Notice was served for the offensive matter in question to be removed forthwith. There is no record of the result.

"Made-ground" unfit for building sites,

Objections to the employment of such "made ground" for building sites have been opposed by quotations from an official report made many years ago by the late Dr. Parkes and Dr. Burdon Sanderson, to the effect that, under certain conditions, such sites became innocuous after the lapse of about three years. One of these conditions is *that the drainage of the site should be good*, which, in the case of the quarries and clayholes in question, one may be sure it is not. Indeed, it is at best problematical whether such ground can *ever* be fit for human beings to live upon.

unless protected by concrete covering, &c.

Under the most favourable circumstances the fitness of such ground should be certified to before any building is allowed upon it, and houses so built should be protected by a layer of solid concrete between the site and the floor, and thoroughly ventilated between this layer and the boards. It is extremely improbable that either of these precautions has been observed in the past.

Vacant ground in all parts of the City is apt to be made use of for purposes of improper deposit on a minor scale. The practice can only be prevented by enclosure of the ground.

(6.)—STRUCTURAL SANITARY DEFECTS OF BUSINESS PREMISES.

Business premises as a cause of disease.

The foundation of much of the sickness of shopkeepers and shop assistants might probably be traced to sanitary defects of business premises, of which the occupants have little or no idea. The shops in a great many of our finest-looking and other streets have common brick drains passing beneath them, conveying the contents of water-closets and sinks directly to the public sewers.

As a rule the ventilation of business premises is not sufficiently attended to, and the result to the occupants, though inappreciable and slow, is a steady depression of vitality, and consequent general predisposition to disease.

(7.)—SCHOOLS AND PLACES OF PUBLIC RESORT.

(*a.*)—Schools.

Schools. Number in the city.

There are upwards of 100 week-day and boarding schools—public and private—in the city. The number of school-pupils is not accurately known to the Health Department. The number of children at the school ages (over 5 and under 15 years) at the Census of 1881 is returned as 11,316. This will give an average of about 300 to each school. The different Board Schools are said to average an attendance of about 1,200. A careful sanitary survey of all the week-day and boarding schools was made

in 1875. Inspections of individual schools have since been made from time to time with the result of establishing the belief that, from a hygienic point of view, little or no improvement has been made during the past eight years. The following observations are for the most part based on the records of the survey in question:—

Sanitary defects,

Ventilation.

(1.)—*Ventilation.*—The appliances for this are fairly good in public, but frequently not so in private, schools, which are seldom specially built for this purpose; in neither is ventilation sufficiently attended to; even in large rooms the air was frequently found to be heavy or stuffy, and in some of the smaller it was often foul, the organic (human) smell being sometimes sickening.

Overcrowding of Elementary Schools.

(2.)—*Overcrowding.*—All successful schools tend to overcrowding. Some of the large public elementary schools receive too many children for their cubic capacity. It is stated that elementary schools count the attendances by the yearly average, and on this number estimate the amount of space for each child, so that the more thinly a school is attended in summer, the more densely may it be crowded in winter, without apparently contravening the regulations.

As an illustration of the result of such overcrowding, the following extract as to the school at Camden Street (inspected in connexion with an outbreak of Measles affecting 12 per cent. of a total of about 300 scholars), is taken from the Annual Report of the Medical Officer of Health for 1880:—

> The amount of air space allowed for each scholar at this school is as follows:—In the large class-room, in which there are assembled from 150 to 180 pupils, the space ranges from 180 to 150 cubic feet per child. This room and the infants' class-room are not sufficiently lighted, being overshadowed by adjacent buildings. In the infants' class-room the space allowed is probably not beyond 100 cubic feet per child, and with a maximum attendance (sixty children) will fall to about 65 feet. The class-room on the first floor (holding from fifty to sixty scholars) allows from 163 to 136 cubic feet each. The closeness of contact thus caused between the pupils, and especially in the infant class-room, undoubtedly helps to account for the spread of the disease.

Private Schools.

In private schools, speaking generally, the cubic space allowed per child is insufficient for health—in some instances grossly so. It seldom reaches 300 cubic feet each; in one better-class boys' school-room it was found to be 141 cubic feet; and in others for scholars of lower social position the amount was frequently much less, being, in certain cases no more than 106, 68, 56, and even 41 cubic feet respectively! The state of the air, under such circumstances, is more easily imagined than described. The respiration of such air, and even of air less polluted, is a prolific source of Scrofula and Consumption; probably also of Respiratory and other diseases.

Lighting.

(3.)—*Lighting.*—This, even in buildings specially constructed for school purposes, is seldom sufficiently considered. The amount of window light should be at least one-sixth of the floor-space. Not only is it necessary to have enough light, but the *direction* from which it comes, and in which it reaches the child, is important. Several diseases of the eye are prevalent during school life, and are attributable to neglect in this particular. "Sixty-two per cent. of those who graduate from the public schools of Germany are near sighted." (Loring.) The large amount of study German children have long undergone is well known. The effect of the system of compulsory education on the sight of English children, under conditions of defective or improper lighting, is yet to be learnt. In public schools the light is generally abundant, but sometimes the scholars are so seated as to be nearly blinded by it, or to have to work in the shadow, instead of having it coming over the left shoulder. Private schools are often insufficiently lighted.

(4.)—*Warming.*—The temperature most desirable for school-rooms is one of about 55° or 60° Fahr. The means of maintaining this temperature in all parts of the room are not always provided, consequently children sitting for a length of time at a distance from the fire or other means of warmth are apt to suffer from chills and internal congestions. **Warming;**

(5.)—*Conveniences.*—Closets and urinals are frequently insufficiently provided for schools. In factories and places where a number of men are employed the proportion of closets to men is usually at the rate of 5 per cent. This is seldom attained in either public or private schools. Examples in private schools were met with of one closet only to 35, 45, and 70 children respectively; and in public schools of one to 40 and 45 respectively; in one instance four closets only were provided for 270 children. **Conveniences;**

(6.)—*Playground, &c.*—All the Board Schools have playgrounds, and, as a rule, are provided with swings and other gymnastic appliances; but, owing to want of room in the former, the latter are seldom very much used. In other public and in private schools either playgrounds or gymnasia are exceptional. **Playgrounds;**

(7.)—*Means of Exit.*—This subject has lately been thoroughly investigated and reported on by a Special Committee. Authorities state that in large schools it is necessary that the doorways should be from eight to twelve feet wide, and that in all schools the doors should open outwards. **Means of exit;**

(8.)—*Number of Storeys.*—Some of the large schools in Newcastle consist of rooms in several storeys, one above another. Schools should not exceed two storeys in height. The effort of climbing is too much for the pupils at all ages. "School girls in their teens suffer from having frequently to climb to the third or fourth storey. . . . They are apt to be unwilling to descend for recess, and so lose the benefit of the outer air, while the rooms in the meantime cannot be properly aired out during their presence in recess time."* **Lofty Buildings, and their effect on health.**

The foregoing remarks apply entirely to secular schools. Sunday schools are equally defective in point of ventilation and overcrowding, and sometimes much more so. The writer well remembers one instance where the children were so densely packed in a Sunday school-room near Hindhaugh Street that there was only allowed for each poor creature the incredibly small space of *three square feet!* This was indeed preparing them for a better world! **Sunday Schools and over-crowding.**

Enough has been said to show that the hygienic requirements of schools should be subject to the control of the Sanitary Authority.

(*b.*)—Places of Public Resort.

Places of public resort.

These include churches, chapels, theatres, assemblies, concert rooms, &c., the more common sanitary defects of which refer to imperfect ventilation, warming, and mode of exit.

(1.)—*Ventilation* in places of public resort is too little considered either as regards the provision of proper apparatus, or attention to such apparatus when provided. **Ventilation;**

(2.)—*Warming.*—Steam-heating is now coming much into vogue. Its advantages for places of public resort are obvious. **Warming;**

(3.)—*Exits.*—The exhaustive report of the Committee on Exits, above referred to, includes in its scope places of public resort as well as schools. **Exits;**

The fouling of the atmosphere by human breath, and the burning of illuminating gas, together with the increase of temperature due to the latter, powerfully predispose to respiratory diseases. In the matter of fouling of atmosphere, it is perhaps not too much to say that chapel-goers suffer more than church-goers, and pleasure-seekers more than either. The use of the electric light and special apparatus for the ventilation of crowded **Air-fouling**

Advantage of electric lighting.

* Buck's Hygiene and Public Health. Article on School Hygiene, by D. F. Lincoln, M.D., Boston, Mass.

buildings are as yet almost unknown in England. Anyone who has enjoyed the comforts of both in a large assembly—as, for instance, in the Savoy Theatre, London—will agree with the writer in earnestly wishing their general adoption in such places.

(8.)—SANITARY DEFECTS IN PRIVATE DWELLINGS.

House-to-house inspection begun last February.

With the approval of the Sanitary Committee a house-to-house inspection, intended to cover all the dwellings in Newcastle, was organized and set on foot in February last. This inquiry was entrusted to the District Inspectors of the Health Department; but as these officers are only four in number, and have other duties, the progress of the work has necessarily been slow. From the beginning of the inspection to the end of September, on an average, above 1,000 habitations in each of the four districts were examined. The following are the results:—

Results to end of September.

Total tenancies examined	4,244
No. of dwellings, 1 room each	911
Do. 2 rooms each	1,531
Do. 3 rooms each	372
Total tenancies for two or more families, with common entrance	2,814
Houses let in flats, self-contained	1.300
Do. otherwise do.	130
Total population of above	18,890
Including members of family, under 12 years of age ...	7,277
Do. do. over do. ...	11,007
Do. lodgers under do. ...	57
Do. do. over do. ...	549

Special staff for house inspection.

If left to the regular District Officers, the inspection of the whole City would not be completed in less than 40 months. To advance the work the Sanitary Committee, on November 21st, authorized the engagement of a dozen special officers, who were appointed without delay, began training on December 10th, and after a fortnight's tuition, will take regular duty. Even with this increase of the staff a long time must elapse before the work can be completed, and it may be necessary to apply for more assistance.

Defects in private houses.

In the interiors of private houses of the better class there are sometimes more sanitary defects than in smaller houses and self-contained flats, as was stated under the head of "Liquid Refuse." The former are copiously supplied with internal pipes communicating with the sewers, water-closets, baths, sinks, lavatories, urinals, &c., on different storeys; whereas in small self-contained dwellings such conveniences are commonly placed in the yard. The Medical Officer of Health has published in his reports, from year to year, accounts of the hygienic faults of construction of private houses—singly or in block—in squares, terraces, and streets, as they have come under his observation. The Report for 1882 contains sketch-plans of some of these defects and the remedies proposed. The remedies proposed, however, are not always the remedies applied. Even in dwellings indicative of luxury and wealth the advantages of the outlay of money for sanitary purposes are not always appreciated, and the requisite work is therefore not done.

The defects of drainage of houses have already been treated of.

Building regulations deficient on sanitary points.

The Building Regulations are in some respects deficient in sanitary requirements. For instance, as has already been mentioned, builders are not required in every instance to cover the sites of intended dwellings with concrete. The regulation as to damp-proof courses should be amended. Cisterns for dietetic water, apart from that for flushing water-closets, should be required, and the owner should be compelled to disconnect the cistern-waste from the drain in every instance. Water-closets in bath-rooms or between bedrooms, or, indeed, within the main walls of a building, should

House-drains should be laid by Corporation.

be prohibited. The laying of house-drains will probably never be satisfactorily done until done by the Corporation. The Engineer recently gave examples of defects of connections with sewers. Similar accounts in abundance might be given from the records of the Health Department of bad, blundering, and careless workmanship on private premises. Faulty materials, badly laid and defective drain-pipes, putty joints, gaping seams, scamping in all its varieties, have made "Jerry-building" and "the sins of the plumber" a by-word and a reproach!

Advantage of having dwellings classified.

From the builder's point of view, it is argued that the average householder, not knowing a good house from a bad one, is apt to purchase or rent the latter on account of its lower price, thus offering a tempting premium on Jerry-building. This, if granted, shows the need of having dwellings classified into first, second, and third quality, according to material and workmanship, a course which would help to protect the householder, and in other ways has much to recommend it.

Unclean houses.

There is often an amount of *inattention to cleanliness* in the offices and yards of private houses that mistresses are surely unaware of. Much of this is the result of the architect designing dark closets and dark holes and corners in which rubbish is stowed away, and litter accumulates unseen. "Let there be light" should be a maxim observed in the arrangement of every part of the house.

The keeping of poultry, pigeons, rabbits, and other small animals on private premises, near dwellings, causes, in the aggregate, a nuisance of considerable magnitude, and, individually, is dirty and offensive.

(9.)—SANITARY DEFECTS OF TENEMENT DWELLINGS.

Tenement dwellings

The condition of tenement dwellings, singly and in block, in all parts of Newcastle has from time to time formed the subject of special reports to the Sanitary Authority. The more noteworthy of these have been published. The insufficient use of water in tenements for purposes of cleanliness has already been referred to in the present Report.

should be oftener lime-washed;

The rooms, staircases, passages, and yards of tenement property are in general not lime-washed sufficiently often. The bye-law requires this to be done twice a year only.

staircases dark and narrow.

Common defects in tenement property in different parts of the City are narrowness and darkness of staircases and passages. In some places the former are less than three feet wide. A large number of tenement houses are built on a general plan, having the staircase at right angles to a long, narrow passage traversing the basement, the staircase itself receiving no direct light. Dirt accumulates on such staircases. Children sitting on the stairs are not unfrequently trod on in the dark.

Buckingham Street.

Buckingham Street, which formed the subject of a special Report in 1878, may be taken as an example, by no means the worst—of tenement property in block. The following are extracts from the Report referred to:—

> *Buckingham Street.*—This street was inspected in connection with an outbreak of Diphtheria in a family of five persons, all of whom suffered severely, and of whom three died. The street is about 1,200 feet long by a mean breadth of 130 feet, including yards, and front street of about 50 feet. The whole covers an area of 3·6 acres, and forms sites for 150 houses, occupied by a population of 922 persons, or at the rate of 252 persons per acre.
>
> Of the tenement property in this street there are 62 numbered houses, comprising 217 tenements—viz., 109 of one room, 103 of two rooms, and three only of five rooms each; 22 of the numbered houses are self-contained with or without shops in front. The remaining houses are occupied by non-residents as workshops, shops, &c.

Defects of ventilation;

Defective ventilation is one of the chief intrinsic sanitary defects of many of the houses.

In 25 houses—viz., 14 in Buckingham Street proper and 11 in Upper Buckingham Street—the staircase is not more than 3 feet wide by about 15 feet long, and is without either means of light or ventilation. As shown in the accompanying plan (see Appendix), it is placed at a right angle to the house passage, which in most cases is only 3 feet wide, and extends from front to back a distance of about 33 feet, and is closed by a door at each end. 29 rooms—viz., 19 in Lower and 10 in Upper Buckingham Street—are more or less damp in walls or ceilings; 9 are dark, viz., 8 in Lower and 1 in Upper Buckingham Street; 44 of the bedrooms (20 in the lower, and 24 in the upper street) are "well rooms"—*i.e.*, rooms without other means of ventilation than the door and window, which are placed close together at one corner (see Plan).* One of these rooms, at No. 79, is 14 feet by 6 feet 2 inches wide, and 8 feet 8 inches high. That of the house in which the cases of Diphtheria occurred measures 15 feet by 7 feet by 8 feet 10 inches. Eight rooms in the street were overcrowded at the time of inspection.

"Well-rooms;"

Yard paving defective;

The paving of 14 yards is defective, and should be replaced by cement. The drainage of 36 yards is defective. In 26 of these cases the drains are either of brick or stone. In others the drain is imperfectly trapped. The ventilation of 31 yards is noted as defective. This is observable chiefly in Lower Buckingham Street, where many of the yards are surrounded on all sides by two-story buildings, and have no outlet except narrow covered passages. The yards of the upper street are also small, and the houses of two streets are near together, but the closing in is not so marked as in the lower street.

Privies and Middens;

The refuse removal is carried out by different methods in different parts of the street. Thus, in Lower Buckingham Street, there are twenty privies and middens (eleven of which were very offensive) on the north side, and only four (of which two were very offensive) on the south side, where water or ash-closets are in general use. In the upper street there are five privies and middens on the high side of the street, and none on the opposite side. From the narrowness of the yards some of these privies and middens are necessarily very close to the houses. At No. 40 the midden is only 3 feet from the door. This midden and some others are emptied through the house passage, which is a great nuisance to the tenants. The middens at Nos. 44 and 46 abut on tenements, the walls of which are saturated with liquid therefrom, rendering the rooms unfit for habitation. At No. 52 the midden is leaking into the yard. At No. 34 there is one midden only for twelve tenants; at No. 51 is one privy only for eight tenants; at No. 7 there are two ash pans for eleven tenants.

Some emptied through the house.

Certain improvements in drainage and refuse removal in Buckingham Street have been made since the above Report was written.

George street, west and back Ceorge street; sanitary defects.

From a similar report in 1880, on George Street West, which, together with Back George Street, contained a population of over 1,200 people, the following particulars are taken:—

There are 148 "well-rooms" in a total of 300; 60 of these are in the cellar-kitchens of back-to-back houses. A plan of the houses was given with the report, showing the dimensions of the "well-rooms" to be 15 feet by 7 feet, by 8 feet 6 inches high. The only openings for ventilation are the door and window, which are placed near one corner of the room. The

* A lithographed copy of the Plan is given in the Annual Report..

circulation of air through the room is therefore almost impossible. A more appropriate title for apartments of this kind would be "Ill-room." Bedrooms of this kind are to be found in even recently-built houses, as, for example, at Janet Street, near Walker Road. The ventilation of all "well-rooms" in the City—and their name is Legion—should be required under pain of closing the rooms as unfit for habitation.

Cellar dwellings should be closed.

Cellar-dwellings, such as those in George Street, should be closed as unfit for habitation, so should all tenements without closet accommodation *outside of the house.*

Over-crowding.

The extent to which overcrowding prevails cannot accurately be stated until the completion of the house-to-house inspection. In eighteen cases only during last year were notices served in consequence of occupants having exceeded the regulation limit of one person to every 300 cubic feet of space.

(10.)—SANITARY DEFECTS OF COMMON LODGING-HOUSES.

Common lodging houses. Number;

There are upwards of 100 Common Lodging-houses in the city, licensed for about 1,700 people. As these are in the Police department a detailed account of their sanitary condition cannot be given here. They are under the supervision of Inspectors selected from the Police force who have not received any special sanitary training. From occasional visits to these Common Lodging-houses the Medical Officer of Health is able to say that several of them are not in good sanitary condition. The Inspectors see that they are kept clean, and apparently enforce attention to the regulations, but the structural arrangements and conveniences are in some cases defective, and it is doubtful if the Inspectors pay much attention to these points.

Requirements;

Every Common Lodging-house should have a liberal supply of water, a wash-house, bath, coal-house, and proper conveniences for different sexes, situated in a yard of its own, &c. These, in most of the lodging-houses of Newcastle, are wanting.

Regulations defective;

The regulations under which the Inspectors act are framed under statutes now repealed, and should be superseded by fresh ones under the Public Health Act, 1875, after the Model Bye-laws of the Local Government Board.

Should be under Sanitary Authority

Although not under the Sanitary Authority, the Inspectors consult the Medical Officer of Health in case of infectious disease.

It is obviously desirable that this section of Public Health work should be transferred to the Sanitary Authority.

(11.)—OCCUPATION IN RELATION TO HEALTH.

Unhealthy occupations.

The following is a list of the numbers occupied in certain businesses, trades, &c., known to be more or less injurious to health:—

EXTRACT FROM TABLES OF CENSUS, 1881, NEWCASTLE-UPON-TYNE (U.S.D.)

Occupations.	No. of Persons Engaged.		
	Males.	Females.	Total.
Cabmen	137	...	137
Printers	530	34	564
Innkeepers	304	98	402
Brewers	111	5	116
Beersellers, &c.	56	20	76
Cellarmen	54	15	69
Wine and spirit merchants or agents...	89	...	89
Tailors	1,069	150	1,219
Milliners, dressmakers, &c.	3	2,201	2,204
Shoemakers and dealers, &c.	1,118	136	1,254
Tanners, fellmongers, &c.	107	2	109
Coal miners	471	...	471
Lead and leaden goods manufacturers..	138	8	146
Brass and bronze manufacturers, &c....	352	2	354

Other persons are engaged in other occupations hurtful to the workers, but their number is comparatively small, and cannot be said to have much influence on the health of the population as a whole.

School life in relation to health.

School life, though not necessarily injurious to health, is so when hygiene is neglected. The conditions described under the head of "Schools" (page 31) predispose to a large amount of disease of various kinds. In addition to these, the arrangement and elevation of seats and desks frequently induce spinal disease, one of the varieties of which "has its principal origin in the position in which children sit during their school time, especially while writing."*

Effect of position;

Mental over-exertion;

From experience gained during the School Survey in 1875, and since that time, the writer has reason to conclude that both pupils and teachers are, as a rule, overworked;† that the present system of teaching the young is being pushed to an injurious extent; and that due regard is not paid to the capabilities or powers of endurance of individual scholars, or even of classes of scholars, at different ages. The result is over-

Over-tasking and brain-forcing.

tasking. As an instance of this, in one school visited, a large class of children under eight years of age were being ground-up in the geography of the county of Northumberland. At the moment of visit the particular subject happened to be the River Coquet, of which each youngster was required by the inspector to be able to name five tributaries—a piece of knowledge of questionable utility (except to anglers) and to which few, even frequenters of that favourite stream, can lay claim.

Whilst the compulsory education of the masses is on its trial in this country the due discrimination between education and mere instruction, or rote-learning, cannot be too strongly insisted on. The former, in proper limits, is healthful and invigorating; the latter, especially if carried too far, is apt to induce degeneration of both body and mind, as numerous authorities have shown. The subject is of national importance, and is so admirably treated in the article on School Hygiene by Dr. D. F. Lincoln, already referred to, that no apology is offered for the following extract:—

> All plans of study which force children to assume a task before the mind is sufficiently developed to grasp it are bad; and so are all which compel the child to learn without understanding what he is old enough to understand. * * * *
>
> It is bad to suppress the natural working of a pupil's thought in connection with his study. This suppression may be effected by neglect, by oversight, by want of sympathy, on the part of a teacher, and when a teacher is herself overworked and forced to attend to an excessive number of pupils, who remain with her for a very short time, she may be free from blame for such neglect. It may also be effected by a routine of study which exacts visible and measurable results—a given number of pages or of "facts" acquired rather than comprehended—a routine which can be and is successfully passed through by scholars only by bending all effort to the act of acquisition. A scholar may not be conscious of it, and may be trying faithfully to do his duty; but if his mind is not properly fed by his school and his teacher, he will show signs of inanition. Food eaten with an appetite is the better digested; and mental dyspepsia is not good for the bodily health.
>
> A more obvious source of bodily or mental injury exists in the overwork and strain which, there is reason to fear, fall upon numbers of our children. By overwork, I mean an absolute excess of exertion; by strain, working at moments of fatigue, or working under excess of emotion. I will speak of these in turn. * * * *

* "School Life in its Influence on Figure, and especially on the Spine." A lecture delivered before the Society for the development of the Science of Education, June 5th, 1878, by R. Liebreich, Consulting Surgeon, St. Thomas' Hospital.

† The jaded look of the latter was often noticed.

1.—*Amount of mental exertion.*—In high schools during the period of rapid growth and sexual development * * * it seems certain that five hours, or, under the most favourable circumstances, six is all that should be required. The age of pupils in high schools usually ranges from 12 to 17.

Proper length of time for study at various ages.

Below the age of 12 years four hours are probably sufficient; below 10 years, three, or three-and-a-half; below 7 years, two-and-a-half, or three. In regard to children under 10 years of age my opinion is strongly in favour of this restriction. The arrangement by which these young pupils are kept in school the same number of hours as those of the age of seventeen is absurd from every point of view except one. That one is, however, the one taken by a majority of parents who consider that they pay to have their children *taken out of their way* for a given number of hours, and are annoyed by their presence at home. Every attempt to cut down the hours of attendance for young children will be met by prejudice based upon this belief.

Work beyond power is no gain.

It is one of the best established laws of physiology that work in excess of the power of the system adds nothing to the result achieved. If a child's capacity is limited to three hours' work, then he will in the long run accomplish no more by being held down to five hours' work a-day. Experience proves this abundantly. Economy in the use of public money demands that it be recognised. If a fact, it ought to occupy a foremost place in the plans for improvement which our school-boards are supposed to entertain. It is therefore proper to state some of the grounds upon which the above statement of the number of hours suitable for children's study is based.

Prolonged Mental Effort bad for children.

The argument *a priori* is complete. Children are characterized by imperfectly developed brains, by a feeble power of concentration, by inability to perform continued tasks of any sort without injury. Their bodies and their minds alike require frequent change of position. It is true that in a child of eight years the mental faculties are employed upon some object or other, and often with earnestness and concentration, for at least twelve hours of each day. But it need hardly be said that the child works very differently from the adult, and that *certain classes of work*, as the scholastic, cannot be performed by him in the same way. The solid results of mature scholarship are attained by the power of long-continued application, of which the child is destitute. A child of from 5 to 7 years is said to be able to attend to one subject, a single lesson, for about 15 minutes; from 7 to 10 years, about 20 minutes; from 10 to 12 years, about 25 minutes; from 12 to 16 or 18 years, about 30 minutes.*

And the inference is justifiable, that a child's power of accomplishment, in mental effort, is represented by half as many hours work daily as in the case of a young person of 15 years * * * *

Under "half-time" system children make good progress.

Advantages of "Half-time" System of Education.—As understood in England, the "half-time" system is a plan for educating children of the labouring classes, by sending them to school for three hours each day, or thereabouts, and employing them in factories, in shops, or on farms, for the rest of the working hours. It is generally found in England that children thus employed make as good progress in study as those who attend school for six hours a day. About a 100,000 children are thus taught * * * *

* This opinion is quoted from the work of Mr. Edwin Chadwick, upon the Half-time System in Education—a work to which the reader is respectfully referred for a large body of facts bearing on this and cognate points.

Strain.

(2.)—*Strain, or Work performed at a Disadvantage.*—In our schools all are expected to "toe the mark," or to accomplish the same stint of work. Those who, for any reason, such as temporary indisposition, are unable to do this, are blamed or punished, and the unusual effort made by such scholars constitutes, in many cases, an injurious strain upon the faculties. In general teachers are not to blame for this. They have no time to spare to help the slow ones, and are not generally permitted to make allowance for indisposition. It is not hard to see how a rigid system or an overcrowded course of study may act in discouraging and depressing a conscientious pupil. The teacher has no time to teach him; he must learn his lesson, or at all events must learn to recite, and if unable to grasp the statements contained, he has the mortification of failure after doing his unaided best. Uniformity enforced on a large scale, an excessive number of pupils to a class, and an excessive number of studies, are so many elements in the production of this evil.

Competition not good for girls.

A system of rank and rewards, based on success in reaching an arbitrary standard of acquirement, is, no doubt, highly stimulating. For boys the stimulus is desirable as a rule, for girls not. The mere amount of labour exacted of children is not so important as the spirit in which it is done; and in the case of girls, the apprehension of failure, the dread of disgrace, the eagerness for success, are so much more acute than in boys, that they are easily injured by appeals to these emotions which would be rather beneficial to boys. To enforce this point—the danger of effort—performed under stress of emotion in sensitive subjects, I will add the remark, that emotion is a far more active cause of insanity than any kind of over-exertion of body or mind.

Health of teachers suffers,

The health of teachers is more liable to fail under our present system than that of scholars. It is perhaps a sadder sight to see a young child's forces of mind exhausted by overwork; but the real loss to the community is greater when a fully-developed woman of cultivation and ability drops from a condition of perfect health and energy into invalidism, temporary or permanent. In the case of a large number of teachers, the fatigue is so great that the two months of summer holidays are spent, as it were upon a sofa, and properly so.

from neglect of exercise,

Several causes may be assigned for this exhaustion. In the first place, no doubt many teachers neglect the exercise which would keep them in health. It is fortunate when one lives at such a distance as to have to walk from four to six miles daily; a habit of exercise formed under these circumstances is invaluable. No doubt some eat too little, through ignorance of what is needful, or take tea instead of beef, or go to bed hungry and cold, or neglect their noon meal, or hurry their breakfasts. Some are weighed down with home cares; scarcely any probably injure themselves by "dissipation in society."

from inattendance to food requirements;

from anxiety,

But, besides all this, there are several circumstances which lie entirely beyond their control, some or all of which are certainly the source of serious harm. The day's work, including the time spent in going to and from school, opening and closing the sessions, lasts from eight to five, with a sufficient intermission at noon. If thoroughly performed, such a day's work is enough for the average capacity of a healthy woman. It calls into vigorous play most of the faculties, and requires a good deal of muscular exertion in speaking. Responsibility is never absent, and annoying conflicts with obstinacy or stupidity are not unfrequent. At the end of a day a teacher should be free to rest and recreate herself until the

from sense of responsibility.

next morning. This, however, is often not the case, and many have to spend several hours of the evening in looking over written exercises or in making up school statistics. Such an overplus of work is injurious, not simply because of its amount, but because it forces the mind to go back to the anxieties of the past day, and allows of no "let up" from Monday morning to Friday night. Business men cannot stand such a course of life, nor can teachers. Who does not recall, in each of these classes, a number of instances of break-down due to a similar cause? * * * *

from over-work.

It is the duty of the medical profession to express an opinion as to the amount of labour which teachers can properly be expected to perform; and in connection with this, the number of scholars that can be attended to. A favourite number in American schools is fifty-six, which appears to the writer too large. By lessening the number of scholars, decidedly greater progress could be made with equal ease, and with better comprehension of the subjects taught.

How many children can a teacher attend to?

The above remarks are applicable in principle to all classes, as well as to teachers and scholars. In modern adult life, the nervous system breaks down so frequently as to have compelled the invention of a new term, "neurasthenia" (described in Vol. XIII. of Ziemssen's Cyclopædia) which corresponds nearly in the male sex, to what has long been known as "spinal irritation" in the female. These difficult, often almost, hopeless cases, are usually the result of a double series of causes,—first hereditary tendency to nervous breakdown; and second, excess of effort, or rather of strain, in adult life. Mere muscular excess is rarely the cause in our times, though sometimes this seems to be the case. Anxiety and continued exertion are the chief causal factors of neurasthenia; and they will doubtless continue to be such as long as "success" remains the absolute duty of every citizen.* * *

Nervous "break-down"

due to anxiety.

The chief difficulty in the case of many men seems to consist in the impossibility of finding for them any relaxation: they have no interest except work, and are unfit for any work except of one sort—that which it is absolutely necessary that they should escape from for a time. The remedy for this mental helplessness may be found in the hands of the educator. When our youth are made to feel that music, botany, carving, and other things which may be taught are objects worthy of the attention, not only of children and half-grown youths, but of men of business and matrons, then a step will be taken, which may lay the foundation of habits of relaxation that will save many a mind from "break-down," or perhaps from insanity. * * * *

Need of relaxation,

and means of mental diversion.

All of us require to see new places and persons; and this longing for change is so far from being inconsistent with steady habits, that it constitutes one of the chief elements in the value of the Sabbath, considered physiologically.

Few men can stand more than five or six hours of original work per day. Somewhat more of routine work may be borne, if performed under good conditions, in good air and light, with a mind free from anxiety, and a stomach that gives no trouble. A good many will not bear ten hours a day of mental routine work.

In the case of women, there is a phrase frequently used by them which suggests an etiology. Many women claim to possess "great nervous strength," with little physical endurance. The meaning of the expression is, that they are capable of an effort of will, sustained for years, if need be, which gradually drains from them all the forces of their system.

(12.)—ADULTERATION OR UNWHOLESOMENESS OF FOOD, DRINK, DRUGS, ETC.

Adulteration of Drugs.

The effect of adulterated or unwholesome provisions on health, though undoubtedly considerable, is difficult of appreciation. Analyses of articles of food and drink are made by the City Analyst from time to time, the results of which are published. It is desirable that the drugs sold in the City should also be analysed, as these articles are liable to adulteration.

Meat-inspection.

The supervision of meat is carefully attended to by the proper Inspector, but, owing to the position of the slaughter-houses, cannot possibly be carried out with the completeness that is necessary. Doubtless, a considerable quantity of unsound meat is sold and consumed for human food. This is only to be prevented by requiring that all cattle, sheep, &c., intended for human food shall be slaughtered in a properly appointed abattoir. The provision of such an abattoir is at present occupying the attention of the Committee.

(13.)—FACILITY FOR DISPOSAL OF THE DEAD.

Children and others buried without medical certificate or inquest.

One circumstance affecting mortality is the facility with which corpses may be interred. It is popularly, but erroneously, supposed that either a medical certificate must be given, or an inquest held on every death, before authority can be obtained for the burial of the corpse. Subjoined is a list of the number of deaths returned, for which no medical certificate has been given, and on which no inquest has been held in the City during the years 1874-82 inclusive:—

No. of such deaths in nine years.

A.D.	Under 1 Year.	1 Year and above.	Total.
1874	122	74	196
1875	110	66	176
1876	119	60	179
1877	85	63	148
1878	56	63	119
1879	82	44	126
1880	87	39	126
1881	90	32	122
1882	91	32	123
Total...	842	473	1,315

The subject of "Uncertified Deaths" has occupied a place in each of the Annual Reports for the years in question. In the year 1874 it was noted that the deaths of 12 per cent. of the children dying under 1 year of age were uncertified. Last year the proportion was 10 per cent. Of the total number of uncertified deaths returned during the nine years in question, over 60 per cent. are those of children under 1 year of age.

EXCITING CAUSES OF DISEASE OPERATING IN NEWCASTLE.

Exciting causes of disease:

The spread of infection is commonly due to—

1.—Direct contact between the sick and the healthy.

2.—Transmission of infected articles, solid and liquid.

3.—Contagium conveyed through atmosphere.

Contact.

1.—*The spread of infection by direct contact* chiefly operates amongst members of the same family. Whenever a second case of infectious disease in a family arises within two or three weeks of the occurrence of a previous one, the latter is generally due to the imperfect isolation of the former. The deficiency of means of isolation, even in large private houses, together with the failure, in nine cases out of ten, to appreciate its signifi-

cance when applied to an infected person (which, unless carried out with the most scrupulous and uninterrupted attention to countless minutiæ, is not isolation at all), are so general that to experts it is not surprising that infection spreads in households, as it does, every day. The placing of the sick person and his attendant in a room or rooms by themselves, with a current of fresh air passing between their apartments and the rest of the house, is a *sine quâ non* in proper isolation. To put the patient in a room say at the top of a stair on which other rooms open, and up and down which persons passing may occasionally meet the nurse, is not proper isolation. Neither is it sufficient to hang a carbolic sheet over the sick-room door. And in what ordinary private houses is more done than this?

Means of isolation generally deficient,

In tenement houses there is not even isolation of the sick from his neighbours, not to speak of the members of his own family. Even in three-room tenements the bed-rooms commonly open directly into the living-room, and in those of two rooms this arrangement is invariable. Of course in those of a single room there is not even separation of the sick from the rest.

especially intenements.

In Appendix B., Table XII., are given the particulars of all the instances during a period of about a month, where a second or subsequent case of infectious disease has been notified in the same family. Eighty per cent. of such families live in tenement dwellings, of which more than half consist of two rooms each. In one instance in the list, in a tenement of three rooms occupied by a family of eight persons (two parents and six children), all of the children had Scarlet Fever and three died. In 40 per cent. of the households referred to in the table, *no precautions whatever were being used to prevent the spread of infection;* and in most of the others, the only preventive measure adopted was the employment of a little disinfectant in the sick-room, a measure calculated to be of very little service. Visiting between the infected and the neighbours goes on to an alarming extent among the poor.

Instances of spread of disease in tenements,

When the tenements consist of only one room each, the opportunity for infection by direct contact is, of course, increased. In property of this kind disease spreads rapidly and extensively, as the following example of an outbreak of Scarlet Fever in a house in Seaham Street, reported in 1880 shows :—

> "This outbreak consisted of 12 cases of Scarlet Fever, of which 6 died in a population of 19 persons occupying four tenements."

The following Table shows particulars of the cases :—

Tenement.	No. of Deaths.	No. of Cases not Fatal.	Total Cases.	No. of Family before occurrence of Scarlet Fever	No. of Rooms in each Tenement.	Part of House.
A	4	2	6	6	2	First floor front
B	...	4	4	5	1	Ground „ „
C	2	...	2	3	1	First floor back
D	...	...	...	5	1	Ground „ „

Tenement A consists of two small rooms—the larger containing 1,224 cubic feet (12 feet 10 inches by 11 feet by 8 feet 8 inches), and the smaller—a "well-room"—779 cubic feet (12 feet 10 inches by 7 feet by 8 feet 8 inches). The tenement is in structure and capacity similar to that at No. 13, Pitt Street, in which two rapidly fatal cases of the same disease were reported last year. The general plan of the house is also like that of No. 13, Pitt Street.

also in "Well-rooms."

It consists of two tenements of a single small room, each on the ground floor, opening into a long dark passage. At right angles to this passage is a staircase 14 feet long, 2 feet 10 inches wide, by 8 feet 8 inches high, without ventilation or light, except at the foot. At the upper end the tenements on the first floor open upon it. It was recommended that the method of lighting and ventilation, as recommended for other similarly constructed tenement property, and as indicated on the accompanying plan, be applied to this house.

Disinfection was done and the rooms were afterwards ventilated.

In cases, such as the foregoing, it is impossible to disinfect a room with the occupants on the premises, and they cannot leave it, as it is unsafe for them to go to the houses of relatives, &c., for fear of conveying the disease by their clothing or persons.

Direct contact is, less frequently, the mode by which infection is spread outside of the domestic circle. In 1881 a servant girl, at a beerhouse in Scotswood Road, whilst peeling copiously from Scarlet Fever, and being in a highly infective state, travelled by tramcar and railway to her home in a country village, where she gave rise to an outbreak of the disease. A few weeks ago a case came under notice of a girl attending a large public day school in Elswick township on the seventh day of an attack of Scarlet Fever. Large elementary schools, especially if crowded with scholars, contribute not a little to the spread of disease by direct contact of the healthy with the infectious sick or convalescents. The case of the outbreak of Measles at the schools in Camden Street (page 32) is an extreme example of this; others might be mentioned.

Risk in Tramcars, and in schools.

It has been found,—

(*a.*)—That parents often justly blame school for spread of disease to their children.

(*b.*)—That principals of schools have sometimes difficulty in preventing children of infected houses from coming to school.

(*c.*)—That school principals are not always sufficiently careful to prevent children from coming from such houses.

Closure of schools or exclusion of scholars from infected homes.

Under Sec. 98 of the Regulations issued last year by the Education Department, the managers of public elementary schools must comply with notice from the Sanitary Authority either to close the school or exclude any scholars from attendance, with the view to prevent spread of disease. School principals, however, have an interest in keeping up the attendances of their pupils, which does not encourage them voluntarily to exclude children coming from infected houses.

Circular to school principals.

A special circular has recently been addressed, by the authority of the Sanitary Committee, to school principals on the prevention of the spread of infectious disease among scholars.

Infection on articles transmitted, from shops, &c., by milk-pail.

2.—*The spread of infection by transmission of infected articles* is believed to be a matter of very frequent occurrence. To such articles lent, given, sold, or pawned, or otherwise exposed, has disease been traced by the Health Department, in numerous instances during the past ten years; and in many others has it been attributable to such articles. Cases of Fever have been found in rooms opening directly into, and sometimes actually used as, shops to which the public have access, or in which articles are prepared for sale—such as provision shops, fruit-shops, confectioners' shops, tailors' work-rooms, public mangling houses, muffin-makers' and meat-pie makers' premises. During the past few weeks several instances of this kind have come under notice, in which infected articles of food, &c., were destroyed by order, and the owners compensated.

Perhaps one of the most ready means for the dissemination of infection is the *milk-pail*. A considerable number of cases of Scarlet Fever at dairies have been met with in recent years. From the character of the

premises, and way in which the business of many of these dairies was carried on, there was liability to infection of the milk, notwithstanding the Dairies' Order—the regulations of which, it is believed, were in all cases carefully attended to by the Inspector. In such cases, precautions enjoined are always followed by promises, but there is never any guarantee that these will be fulfilled. In one instance a delinquent was fined for selling milk from infected premises after caution. Milk sent from the country has more than once been associated with, and strongly suspected as being the direct cause of, serious outbreaks of Scarlet Fever in Newcastle. One of these occurred in 1879, and consisted of 23 cases of Scarlet Fever, of which no less than ten were fatal, in 14 households, all deriving their milk from a common source in the country.* A similar outbreak occurred in autumn of the present year, and was, like the preceding, made the subject of a special report, of which the following is a copy:—

REPORT ON AN OUTBREAK OF SCARLET FEVER IN A MILK-WALK.

Outbreak of Scarlet Fever in a milk-walk in Jesmond.

Toward the close of August last my attention was directed to the prevalence of Scarlet Fever in Jesmond and other parts of Newcastle. As several of the cases were found to have been supplied with milk from the same dairy, a special investigation into the circumstances was at once begun.

On August 29th I visited the dairy, which is at a farm in the country about a mile beyond the boundary of the city.

Suspicious illness at dairy.

I learned that some of the children at the farm had been ailing for a few days past, and that one of them had a sore throat, but none had any rash on the skin. I at once communicated with the family doctor, who informed me that he had under observation three children on the farm, viz., two in the house and one in a cottage adjoining. He stated that all had sore throats and "glandular enlargement in the neck," without eruption. One of the children was described as suffering from "a very bad throat of a follicular type, with aphthæ about the mouth." The doctor did not consider the disease to be Scarlet Fever.

It was afterwards reported to me that, a few weeks before the three children fell ill, a monthly nurse attending on Mrs. S. in the house had complained of a slight sore throat, and that, following this, Mrs. S. had herself been similarly affected; and again, after she recovered, one of her children took sore throat but had not any appearance of rash. On being questioned, both the nurse and Mrs. S. contradicted these statements.

On my first visit to the dairy I was informed that the cows (18 in number) are milked by two servants, both of whom were then, and had previously been, in good health; and that one of these and the nephew of the proprietor deliver the milk daily to customers in Newcastle. The milk is for the most part distributed from large cans, very few of the customers having small private tins. It was stated that several families near the farm were also supplied with milk from this dairy, and that none of these had been affected with Scarlet Fever.

List of customers, and

On being asked, the dairy-keeper without hesitation agreed to furnish a list of the customers in Newcastle and sent it next day.

This list contains the names of 75 customers chiefly in the northern portion of the city. Of these, 14 or above 18 per cent. consist of families affected with Scarlet Fever during August and the first eight days of September, and two others are notified as having been

* See Annual Report, 1879.

proportion affected with Scarlet Fever, &c.

affected with Diphtheria. Of 29 customers in *Jesmond Ward*, 8, or above 27 per cent., were notified during the same period as being affected with Scarlet Fever; whereas in families *not* deriving their milk from this dairy, Scarlet Fever was notified on four occasions only in this ward (five cases). The first of the above cases in Jesmond was notified on August 3rd, and occurred in a family supplied with this milk. Prior to that date the ward had for several months been free from the disease.

Dairy premises,

Dr. Alexander, the Medical Officer of the Rural Sanitary District in which the dairy is situated being absent on account of his health, I was unable to meet him at the farm until September 25th. As the dairy-keeper demurred to my inspecting the dairy premises, I am unable to report on them. I was allowed to examine the pump in the yard and afterwards to obtain a sample of the water. The water of the Newcastle and Gateshead Water Company had been laid on to the farm since the time of my first visit (August 29th), but as the pipes were still somewhat rusty, it had not yet got into favour.

and water supply.

The pump was situated over a slop sink-stone within five feet of the cow-house. The well, which we could not see, is said to be under the wash-house. The water from the well is in good repute at the dairy. A sample was drawn and forwarded to the Public Analyst, Mr. John Pattinson, for report, which is subjoined:—

SAMPLE MARKED "WELL WATER, No. 58."

	Contains per gallon.
Total solid matters in solution	67·000 grs.
Chlorine	7·251 „
Ammonia	0·001 „
Albuminoid Ammonia	0·006 „
Oxygen absorbed in 15 minutes	0·020 „
Oxygen absorbed in 4 hours	0·030 „
Lead and other poisonous metals	none.
Appearance in two-foot tube ...	clear and colourless.
Smell when heated to 100° Fah.	none.
Microscopical examination	satisfactory.

Appearance of convalescents at dairy.

Whilst at the farm we examined the children, who were then convalescent. Those at the dairy still bore traces of the tonsillar ailment, but showed no sign of desquamation or dropsy. The child at the cottage had also enlarged tonsils, and there appeared to be some peeling of the skin of the abdomen, but this latter might be due (as the mother suggested) to the external application of cod-liver oil some time before.

Scarlet Fever near dairy.

I was informed by Dr. Alexander that, for some time prior to the occurrence of the cases at the dairy, Scarlet Fever had been prevalent in the district round and at no great distance from the farm.

Whilst the cases were coming under notice in Newcastle, and since then, I have held frequent communication with the medical attendant of the patients at the dairy farm with the object of ascertaining whether any further cases had come under his observation at the farm, or whether any fresh light could be thrown on those already under his care, which, notwithstanding the opinion he had formed as to their nature, I could not but regard with suspicion. He has expressed himself as being convinced that the outbreak in Newcastle was "in no way connected" with that at the dairy.

Spread of infection by milk not proven but suspected.

The foregoing is a brief summary of the facts, so far as I have been able to ascertain them. Considering the positive opinion, as above given by the medical attendant who watched the cases there throughout, it is impossible to support a judgment against the milk as the vehicle of contagium from the dairy to the households in

Newcastle. At the same time the occurrence of the illness at the farm and the large proportion of infected families in the dairy custom, cannot but be regarded as a most unusual, not to say highly suspicious, coincidence, which is rendered still more significant by the fact that the recovery of the cases at the farm has been followed by a cessation of fresh cases in the Milk-Walk. Since September 8th, the day on which the last of these was notified, two other cases only of Scarlet Fever have been returned from Jesmond Ward.

Advantage of having lists of customers to compare with cases of sickness.

The investigation has demonstrated the advantage of having, in such inquiries, a list of persons supplied with milk from suspected or infected dairies, power to compel the furnishing of which was obtained by the Corporation in the Newcastle Improvement Act of last year. In the present case the list was furnished willingly at our request. With it, and the notification returns, the houses affected in the Milk-Walk were seen at a glance.

Need of map of Rural Sanitary Districts.

In the early stages of the inquiry much time was occupied in ascertaining the medical officer of the Rural Sanitary District in which the dairy is situated, the farm being near the boundaries of three different rural districts. Delay arose from the same cause in a similar inquiry in 1879, into an outbreak of Scarlet Fever in Newcastle associated with a dairy in the country. The difficulty might be obviated by a map showing precisely the limits of the different sanitary districts and the name of the Medical Officer of Health to each.—HENRY E. ARMSTRONG,

Medical Officer of Health.

Town Hall, 16*th October*, 1883.

Infection from Libraries;

It is well that the public should be cautioned against sending to the libraries of the city for books to read during convalescence after infectious sickness.

---

by house defects;

The invasion of a house by Fever is often traced to defective sanitary appliances, such as those described in a preceding section of this report.

---

through air.

3.—*The spread of infection through the open air* may depend on either of the following:—

(*a.*)—Some large centre of contagium, such as a Hospital.
(*b.*)—Ground-crowding.
(*c.*)—Contamination of the atmosphere with exhalations from infective matter.

Hospital-influence.

It is believed that no case of Small-pox during the present year has been due to infection from Hospital. The closure of the Small-pox wards in Bath Lane last year was due to a suspicion that several cases of the disease in the neighbourhood of Stowell Street were due to hospital-influence. But no such suspicion has been felt as to the Hospital on the Town Moor. Fever has never been known to spread from the Bath Lane Hospital to the outside.

Ground-crowding.

Ground-crowding has probably contributed considerably to the spread of infection in the city. Wherever the one has prevailed, so has the other.

Privy-Middens.

The spread of infection of Enteric Fever has frequently during late years been attributed to infected discharges thrown into privy-middens. The prevalence of Diarrhœa also in certain localities has been thought to depend on a similar cause.

ACTION TAKEN TO PREVENT THE SPREAD OF INFECTION.

Preventive measures adopted in Newcastle.

On receipt of every notification of a case of infectious disease by the Health Department, a Special Inspector is sent without delay to investigate into the circumstances of the case, to furnish the householder with printed "Instructions" as to the prevention of infection, to superintend removal to Hospital in suitable cases, and to arrange for and subsequently to carry out, the final purification of premises, the removal of infected articles to the Disinfecting Station, &c.

Infectious disease, Inquiry Form.

For the purpose of making as complete as possible the investigation into the circumstances to which the particular case is attributable, or by which infection from it may be conveyed to other persons, the sanitary condition of the house, &c., a printed Form,* for the Inspector to fill in on the spot, has lately been brought out with the approval of the Sanitary Committee. The form is printed on paper of a different colour for each disease so as to facilitate reference afterwards. The form has only been in use about three months, but has already been of considerable service in tracing outbreaks and throwing light on the causes of the spread of numerous cases of Scarlet Fever, &c.

Indications.

The indications of the preceding pages on the exciting causes of infectious disease are mainly two, viz., (1.)—That there should be ample Hospital accommodation for infectious diseases, free to the poor, and providing means of isolation for those in higher social position on suitable payment; and (2.)—That there should be power to compel the removal to Hospital of all cases of infectious disease in tenement property and wherever isolation is not practicable, a power which would probably have been granted last year but for the want of a Hospital. The Corporation have recently approved of Plans for the erection of a suitable Hospital on their own land at Heaton.

Need of free Fever Hospital and compulsory isolation of Fever in tenement houses, &c.

After the completion of this Hospital, it is desirable that steps should be taken to obtain the necessary power to secure its full use for the benefit of the citizens at large.

The foregoing is a statement of the principal causes, so far as the writer is able to give them, of the recently-increased mortality of the City. In considering a question so intricate and complex as the conditions by which the health, not of an individual only, but of a large population, is influenced unfavourably, it must not be assumed that the explanation is to be found in any recently-occurring changes or conditions. The high death-rate is due to no new thing. Its causes are an "oft told tale." The present report, in many of its features, is but a *resumé* of those submitted during the last ten years.

The time occupied in gaining the experience embodied in its pages would be well spent if our population learnt from it two lessons, viz.:—that

No amount of ingenuity will obviate the necessity for cleanliness!

And that

The health of the city demands not palliative, but energetic, treatment.

RECOMMENDATIONS, &c.

The numerous indications for hygienic improvement contained in the foregoing report are sufficiently explicit and need not be recapitulated.

With the view to prevent one of the great evils of our city—ground-crowding—it is suggested that, failing the acquisition of authority to check

* Copy given in Appendix.

the number of houses to be built on a given area, power be sought to extend the regulation limit of room space to 500 cubic feet per person occupying houses built after a certain date.

The education of the different classes of society in the elements of hygiene is greatly to be desired. This, in the first instance, would probably be best brought about by popular lectures on hygiene at a nominal charge for admission. Arrangements might advantageously be made for a special course of lectures to plumbers, builders, and others, on the sanitary requirements of houses, &c. Such a course could not fail to be of interest to householders, and should be well attended.* Much good may be done by Sanitary Associations of philanthropic and educated persons, clergymen, doctors, &c., for the purpose of influencing public opinion, quickening the consciences of tenement owners, &c.; with a branch under the direction of ladies for the organization of house visitation among the poor, on the principle of the London Ladies' Sanitary Association.

There is ample scope in Newcastle for a Miss Octavia Hill.

HENRY E. ARMSTRONG.

* Some years ago the writer proposed to the Council of the College of Physical Science to deliver such a course in that Institution. The project was very favourably received, but, owing to circumstances beyond the control of either the Council or the proposer, afterwards fell through. A similar scheme in the hands of persons with time at their disposal might succeed now.

CITY OF NEWCASTLE-UPON-TYNE,

1883.

APPENDIX A.

Third Quarterly Report on the Public Health of Newcastle-upon-Tyne.

During the thirteen weeks ending 29th September, 1883, 1,315 births and 1,009 deaths have been registered in the City. The births represent an annual rate of 35·2, and the deaths an annual rate of 27·0, per 1,000 of estimated population at all ages.

Table of Births and Deaths Registered in the City during the Thirteen Weeks ending 29th September 1883.

Sub-Districts.	Births.					Deaths.		
	Male.		Female.		Total.	Male.	Female.	Total.
	Legitimate.	Illegitimate.	Legitimate.	Illegitimate.				
Westgate	279	18	250	5	552	210	207	417
St. Andrew's	67	3	73	4	147	53	61	114
St. Nicholas'	35	2	31	1	69	61	44	105
All Saints'	101	7	114	9	231	96	78	174
Byker	157	4	148	7	316	103	96	199
City	639	34	616	26	1,315	523	486	1,009

The average death-rate for the third quarter of the three preceding years is equal to 22·8 per 1,000 per annum.

The Rates of Mortality from all Causes per 1,000 per Annum in the different Sub-Districts, Calculated on the Estimated Population of each, are as follow:—

Sub-Districts.	1882.	1883.
	Third Quarter.	Third Quarter.
Westgate*	22·3	26·3
St. Andrew's	17·0	29·0
St. Nicholas'	46·1	41·6
All Saints'	23·1	27·8
Byker	26·7	25·0
Entire City	24·4	27·0

The death-rate of St. Nicholas' Sub-District is increased by 39 deaths in the Infirmary, of which 27 refer to patients admitted to that Institution from beyond the City, and by 7 deaths in the Fever and Small-pox Hospitals.

* Includes Workhouse.

THE FOLLOWING TABLE SHOWS THE WEEKLY NUMBERS OF BIRTHS AND DEATHS FROM ALL CAUSES, AND ALSO THE DEATHS FROM CERTAIN DISEASES LIABLE TO FLUCTUATION, DURING THE QUARTER ENDING 29TH SEPTEMBER, 1883 :—

WEEK ENDING.	Births.	DEATHS FROM.							Mean Temperature Fahrenheit.	Rainfall.
		All Causes.	Pulmonary Consumption.	Diseases of Respiratory Organs other than Consumption.	Miasmatic Order of Zymotic Diseases.*	More Prevalent Miasmatic Diseases.				
						Measles.	Scarlet Fever.	Diarrhœa.		
										Inches.
July 7 ...	107	65	6	13	12	12	...	...	61·1	1·28
„ 14 ...	117	78	7	15	16	9	2	...	60·2	·15
„ 21 ...	111	85	6	12	18	11	3	2	53·5	·79
„ 28 ...	117	68	4	5	25	15	1	4	54·3	1·44
Aug. 4 ...	95	95	8	10	26	17	2	4	58·8	·65
„ 11 ...	90	65	6	8	13	4	1	3	57·5	·52
„ 18 ...	112	68	2	12	14	6	2	3	56·7	1·43
„ 25 ...	87	79	7	15	23	13	4	4	61·5	...
Sept. 1 ...	104	83	4	15	23	10	...	10	59·0	·19
„ 8 ...	94	78	8	5	20	6	1	9	54·0	1·34
„ 15 ...	92	67	8	13	14	7	1	5	54·0	·42
„ 22 ...	98	83	7	9	16	6	1	3	56·2	1·43
„ 29 ...	91	95	6	6	31	13	4	9	56·5	·44
Totals ...	1,315	1,007	79	138	251	129	22	56	Mean. 57·1	10·08

Diseases of the Respiratory Organs have caused 138 deaths, as compared with 153 during the previous quarter.

RETURN OF DEATHS FROM MIASMATIC DISEASES DURING THE THIRTEEN WEEKS ENDING 29TH SEPTEMBER, 1883, CORRECTED BY DISTRIBUTION OF THOSE OCCURRING IN THE FEVER HOSPITAL, TO THE REGISTRATION SUB-DISTRICT FROM WHICH THEY CAME.

	Number in City.	West-gate.	St. Andrew's.	St. Nicholas'.	All Saints'.	Byker.
Total Miasmatic Deaths ...	251	98	26	14	43	70
INCLUDING—						
Small-pox	7	4	...	...	1	2
Measles	129	58	8	3	22	38
Scarlet Fever	22	6	7	1	4	4
Diphtheria	...	...	...	...	...	...
Whooping Cough...	17	8	...	1	2	6
Typhus Fever	1	...	...	...	...	1
Enteric Fever	6	2	1	1	...	2
Simple Continued Fever ...	1	1	...	...	...	...
Diarrhœa	56	15	9	5	11	16
Other Miasmatic Diseases ...	12	4	1	3	3	1
Total Miasmatic Deaths per 1,000 population of each Sub-District	6·7	6·2	5·4	5·5	6·9	8·8
Deaths per 1,000 population from Measles	3·5	3·7	1·7	1·2	3·5	4·8
Do. from Scarlet Fever ...	0·6	0·4	1·5	0·4	0·6	0·5
Do. from Diarrhœa	1·5	0·9	1·9	2·0	1·8	2·0

* Including all Febrile Diseases, Croup, Whooping Cough, Diarrhœa, etc.

RETURN OF DEATHS FROM MIASMATIC DISEASES.—*Continued.*

AGES AT DEATH.

	Number in City.	West-gate.	St. Andrew's.	St. Nicholas'.	All Saints'.	Byker.
Under 1 year	277	112	27	26	45	67
1 year and under 5 years ...	243	98	23	7	54	61
5 „ 20 „ ...	73	31	7	13	8	14
20 „ 40 „ ...	122	42	19	24	19	18
40 „ 60 „ ...	140	57	16	20	24	23
60 „ 80 „ ...	130	66	19	15	19	11
80 and upwards	24	11	3	...	5	5
Total	1,009	417	114	105	174	199

The total number of deaths in the Miasmatic Order of Zymotic Diseases is 251, representing an annual rate of 6·7 per 1,000 population, against 131, or an annual rate of 3·5 per 1,000 in the previous quarter.

The increase in the deaths from Miasmatic Disease in the present as compared with the preceding quarter is chiefly notable in Westgate (98 against 48), St. Andrew's (26 against 12), All Saints' (43 against 17), and Byker (70 against 40).

The diseases whose mortality exhibit an increase above that of the preceding quarter are:—

Measles, from which 129 deaths in the City are returned, against 37 in the previous quarter, viz.:—58 in Westgate, against 21; 8 in St. Andrew's, against 9; 3 in St. Nicholas', against 3; 22 in All Saints', against 4; and 38 in Byker, against 0.

Scarlet Fever, from which 22 deaths are returned, as compared with 16 in the previous quarter, viz.:—6 in Westgate, against 4; 7 in St. Andrew's, against 0; 1 in St. Nicholas', against 1; 4 in All Saints', against 0; and 4 in Byker, against 11.

Whooping Cough, from which 17 deaths are returned, against 7 in the previous quarter, viz.:—8 in Westgate, against 1; 1 in St. Nicholas', against 0; 2 in All Saints', against 1; 6 in Byker, against 5.

Diarrhœa, from which 56 deaths are returned, against 12 in the previous quarter, viz.:—15 in Westgate, against 5; 9 in St. Andrew's, against 0; 5 in St. Nicholas', against 0; 11 in All Saints', against 2; and 16 in Byker, against 5.

The diseases whose mortality shows a decrease below that of the previous quarter are:—

Small-pox, from which 7 deaths are returned, against 23, viz.:—4 in Westgate, against 1, 0 in St. Nicholas', against 3; 1 in All Saints', against 5; and 2 in Byker, against 14.

Typhus Fever, from which 1 death is returned, against 7, viz.:—0 in Westgate, against 2; 0 in St. Nicholas', against 3; 1 in All Saints', against 5; and 2 in Byker, against 14.

Of the deaths from all causes, 277 are those of children under one year of age, representing an annual rate of 7·4 per 1,000 population at all ages. In the corresponding quarter of last year the rate was 8·7, and in that of 1881 it was 7·5.

The percentage of deaths under one year to births registered is 21·0. In the corresponding quarter of last year it was 22·3, and in that of 1881 it was 20·9.

154 of the deaths from all causes are those of persons aged 60 years and upwards. In the previous quarter the number dying at these ages was 143.

(Signed) HENRY E. ARMSTRONG,
MEDICAL OFFICER OF HEALTH.

Town Hall, Newcastle-upon-Tyne,
11th October, 1883.

APPENDIX B.

TABLE I., SHOWING INCREASE OF MORTALITY FROM CERTAIN NON-INFECTIOUS AND CHRONIC DISEASES.

Diseases, &c.	Deaths during 3rd Quarter of 1883.	Deaths in year 1882.	Annual Increase in 3rd Quarter of 1883 over year 1882.	Annual Rate per Cent. of Increase of 3rd quarter of 1883 over year 1882.
Bronchitis	75	268	32	12
Pneumonia	42	128	40	31
Scrofula	27	74	38	50
Tabes Mesenterica ...	26	57	43	81
Nephritis and Kidney Diseases, &c.	22	30	62	206
Premature Births... ...	21	67	17	25
Atrophy and Debility ...	74	258	38	14
Total	287	882	270	30

TABLE II., SHOWING ANNUAL RATE OF INCREASE PER CENT. OF DEATHS IN THIRD QUARTER OF 1883 OVER THOSE IN THE YEAR 1882, IN EACH SUB-DISTRICT, FROM THE UNDERMENTIONED DISEASES:—

Registration Sub-Districts of the City.	Bronchitis. Increase per Cent.	Pneumonia. Increase per Cent.	Scrofula. Increase per Cent.	Tabes. Increase per Cent.	Nephritis and Kidney Diseases, &c. Increase per Cent.	Premature Births. Increase per Cent.	Atrophy and Debility. Increase per Cent.
Westgate ...	14	85	90	126	300	82	9
St. Andrew's	slight decr.	decr.	decr.	decr.	33	decr.	33
St. Nicholas'	incr. 29	decr. $\frac{1}{2}$	decr.	decr.	243	incr. 100	33
All Saints' ...	...	incr. 16	incr. 243	incr. 126	250	incr. 50	21
Byker ...	incr. 36	incr. 21	incr. 180	...	100	decr.	5
City ...	12	31	50	81	23	25	14

TABLE III., THIRD QUARTER, 1883.—DEATHS FROM CERTAIN CHRONIC DISEASES.

SCROFULA.

REGISTRATION SUB-DISTRICTS.	AGE AT DEATH.							
	Under 1 Year.	1—5 Years.	5—20 Years.	20—40 Years.	40—60 Years.	60—80 Years.	80 Years and upwards	Total.
Westgate	5	6	2	1	2	...	...	16
St. Andrew's	...	...	...	...	...	...	...	...
St. Nicholas'	1	...	...	...	...	...	...	1
All Saints'...	...	2	1	...	...	...	...	3
Byker	1	3	3	...	...	...	...	7
	7	11	6	1	2	...	...	27

TABES MESENTERICA.

Westgate	9	5	...	...	...	...	...	14
St. Andrew's	...	...	1	...	...	...	...	1
St. Nicholas'	1	...	...	...	...	...	...	1
All Saints'...	2	3	...	...	...	...	...	5
Byker	5	...	...	...	...	...	...	5
	17	8	1	...	...	...	...	26

NEPHRITIS AND KIDNEY DISEASES, &C.

Westgate	1	2	1	3	2	...	1	10
St. Andrew's	...	...	...	1	1	...	...	2
St. Nicholas'	...	...	1	1	3	...	...	5
All Saints'	...	1	2	1	...	...	...	4
Byker	...	...	...	...	...	1	...	1
	1	3	4	6	6	1	1	22

PREMATURE BIRTH.

Westgate	10	...	...	...	...	...	...	10
St. Andrew's	...	...	...	...	...	...	...	...
St. Nicholas'	3	...	...	...	...	...	...	3
All Saints'...	3	...	...	...	...	...	...	3
Byker	5	...	...	...	...	...	...	5
	21	...	...	...	...	...	...	21

ATROPHY AND DEBILITY.

Westgate	21	3	...	...	...	2	...	26
St. Andrew's	5	1	...	...	...	2	...	8
St. Nicholas'	6	1	...	...	...	...	...	7
All Saints'...	12	4	...	...	...	...	...	16
Byker	16	...	...	...	...	1	...	17
	60	9	...	...	...	5	...	74

Table IV.—Ages at Death.

Age at Death.	Deaths in 3rd Quarter, 1883.	Deaths in the Year 1882.	Annual Rate per Cent. Increase of Deaths in Col. 2 over Col. 3.
Under 1 year	277	914	21
1 year and under 5 years ...	243	511	90
5 years and under 20 years ...	73	312	Decrease 7
All ages	1,009	3,403	15·6

Table V.—Statistics as to Population and Houses, taken from Census Tables, 1881.

Place.	Population.	Houses.	No. of Persons to a House.
Birkenhead	84,006	13,232	6·4
Birmingham	400,774	78,301	5·1
Blackburn	104,014	20,099	5·2
Bolton	105,414	20,928	5·0
Bradford	183,032	37,395	4·9
Brighton	128,440	20,395	6·3
Bristol	245,005	38,586	6·4
Cardiff	82,761	12,185	6·8
Derby	81,168	16,188	5·0
Halifax	73,630	15,860	4·7
Huddersfield	87,157	18,005	4·8
Hull	154,240	32,388	4·8
Leeds	309,119	64,981	4·8
Leicester	122,376	24,973	4·9
London	2,920,485	369,282	7·9
Liverpool	552,508	92,307	6·0
Manchester	341,414	67,064	5·1
NEWCASTLE-UPON-TYNE	**145,359**	**20,264**	**7·2**
Norwich	87,842	19,743	4·5
Nottingham	186,575	38,548	4·8
Oldham	111,343	22,555	5·0
Plymouth	73,794	7,839	9·4
Portsmouth	127,989	22,701	5·6
Preston	96,537	19,458	5·0
Salford	176,235	34,206	5·2
Sheffield	284,508	57,330	5·0
Sunderland	116,542	16,087	7·2
Wolverhampton	75,766	14,470	5·2
England			5·4

TABLE VI.—RETURNS OF POPULATION PREPARED FROM CENSUS TABLES, 1881, VOL. III.

URBAN SANITARY DISTRICT.	RATE PER 1,000 POPULATION AT ALL AGES.		
	Of Children under 1 Year.	Of Children under 5 Years.	Persons born in Ireland.
London	29·2	130·2	21·1
Norwich	28·3	126·0	3·7
Plymouth...	26·8	118·0	19·3
Bristol	28·5	132·5	15·4
Wolverhampton	30·7	143·5	22·5
Birmingham	31·1	144·8	17·6
Leicester	33·0	141·1	7·7
Nottingham	28·8	130·5	8·2
Liverpool	31·5	138·7	128·4
Manchester	29·3	134·5	74·8
Salford	32·5	146·6	73·6
Oldham	28·6	143·7	40·0
Bradford	29·3	133·2	42·9
Leeds	31·4	142·3	30·8
Sheffield	32·2	146·2	17·5
Hull	30·2	142·9	16·0
Sunderland	31·1	147·5	38·3
NEWCASTLE	**30·5**	**141·4**	**37·8**

TABLE VII.—RETURN OF CASES OF SCARLET FEVER IN THE DIFFERENT PARISHES, &c., FROM THE 1ST JULY TO 17TH NOVEMBER, 1883.

Parish or Township.	Week ending 7th July.	Fortnight ending 21st July.	Fortnight ending 4th August.	Fortnight ending 18th August.	Fortnight ending 1st September.	Fortnight ending 15th September.	Fortnight ending 29th September.	Fortnight ending 13th October.	Fortnight ending 27th October.	Fortnight ending 11th November.	Week ending 17th November.	Total.
	Cases	Cases	Cases	Cases	Cases	Cases	Cases	Cases	Cases	Cases	Cases	Cases.
Elswick ...	4	3	8	1	3	3	7	12	9	13	20	83
Westgate ...	2	8	6	3	4	5	7	5	9	31	11	91
St. Andrew's ...	2	5	4	10	10	10	7	6	7	8	6	75
St. John's ...	...	...	...	...	1	1	...	...	...	...	...	2
St. Nicholas' ...	...	...	...	...	2	...	...	...	1	1	...	4
All Saints' ...	...	...	6	11	7	8	11	19	13	20	13	108
Jesmond ...	1	...	2	4	10	5	2	...	11	3	1	39
Byker	1	3	1	1	4	2	3	2	3	17	4	41
Total	10	19	27	30	41	34	37	44	53	93	55	443

TABLE VIII.—CASES NOTIFIED BY MEDICAL PRACTITIONERS IN 1883 (TO AND INCLUDING 17TH NOVEMBER).

	Small-pox.					Typhus Fever.					Enteric (or Typhoid) Fever.					Continued Fever.					Scarlet Fever.					Diphtheria.					Puerperal Fever.					Totals
	1st Quarter.	2nd Quarter.	3rd Quarter.	7 weeks ended 17th Nov., 1883.	Total.	1st Quarter.	2nd Quarter.	3rd Quarter.	7 weeks ended 17th Nov., 1883.	Total.	1st Quarter.	2nd Quarter.	3rd Quarter.	7 weeks ended 17th Nov., 1883.	Total.	1st Quarter.	2nd Quarter.	3rd Quarter.	7 weeks ended 17th Nov., 1883.	Total.	1st Quarter.	2nd Quarter.	3rd Quarter.	7 weeks ended 17th Nov., 1883.	Total.	1st Quarter.	2nd Quarter.	3rd Quarter.	7 weeks ended 17th Nov., 1883.	Total.	1st Quarter.	2nd Quarter.	3rd Quarter.	7 weeks ended 17th Nov., 1883.	Total.	
Elswick ...	29	14	5	...	48	2	4	...	1	7	20	11	6	5	42	4	2	4	...	10	51	33	31	53	168	1	...	2	1	4	1	...	...	1	2	281
Westgate ...	35	10	15	...	60	4	3	...	...	7	11	5	9	4	29	2	1	1	1	5	38	30	33	54	155	...	3	2	...	5	1	...	...	...	1	262
St. Andrew's...	12	7	3	...	22	2	...	...	...	2	7	...	8	6	21	1	1	...	2	4	14	30	46	27	117	2	1	2	...	5	...	1	...	...	1	172
St. John's ...	15	4	...	...	19	9	1	...	1	11	1	...	...	1	2	...	...	1	...	1	5	7	4	...	16	...	...	...	...	...	...	...	...	...	...	49
St. Nicholas'...	3	4	...	...	7	16	11	...	...	27	3	1	3	1	8	4	1	...	...	5	1	10	2	2	15	...	...	...	...	...	...	...	...	...	...	62
All Saints' ...	29	51	5	1	86	19	2	5	...	26	11	5	6	8	30	2	1	...	2	5	23	20	44	62	149	2	5	...	1	8	1	...	...	...	1	305
Jesmond ...	...	6	7	...	13	1	1	...	...	2	...	...	...	2	2	1	...	...	...	1	8	13	24	15	60	...	...	...	...	...	...	...	...	1	1	79
Byker... ...	98	124	12	1	235	8	4	1	...	13	25	6	8	6	45	1	1	...	...	2	55	68	15	32	170	3	1	...	1	5	...	...	...	1	1	471
Total ...	221	220	47	2	490	61	26	6	2	95	78	28	40	33	179	15	7	6	5	33	195	211	199	245	850	8	10	6	3	27	3	1	...	3	7	1,681

TABLE IX.—STREET LIST OF CASES OF INFECTIOUS DISEASE REPORTED DURING 13 WEEKS ENDED 29TH SEPTEMBER, 1883, WITH DEATHS REGISTERED DURING SAME PERIODS.†

As scarlet fever has prevailed extensively since the end of the Third Quarter, details of the epidemic are given up to a later date.

NAME OF STREET.	Scarlet Fever.				Small-pox.		Typhus.		Enteric or Typ'd Fever.		Con-tinued Fever.		Diph-theria.		Deaths from Measles regist'rd during 13 Wks. ended 29th Sept., 1883.
	Cases during 3rd Qr., 1883.	Deaths during 3rd Qr., 1883.	Cases during 7 Weeks ended 17 Nov., 1883.	Deaths during 7 Weeks ended 17 Nov., 1883.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Akenside hill	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Albert street	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Albion yard	...	...	..	...	...	...	...	...	...	...	...	...	...	...	1
Alexandra place	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Alexandra street	...	...	...	...	...	..	...	...	...	...	...	...	...	...	1
Alexandra terrace	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Abinger street	...	...	1	1	1	...	...	...	...	...	...	...	...	...	...
Addison street	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...
Alma terrace	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Blagdon street	...	...	5	1	...	..	...	...	...	...	...	...	...	...	...
Buxton street (Chapel buildings)	...	...	8	3	...	..	...	...	...	...	...	...	...	...	1
Brewery bank	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...
Bolton terrace	2	...	...	...	...	...	...	..	...	...	...	...	...	...	...
Brunswick place	3	1	...	...	...	...	...	...	...	...	...	...	...	..	...
Bulmer street	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Blackett street	...	..	...	..	...	...	...	...	2	1	...	...	...	...	...
Bayley street	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Barrack road	5	...	1	...	...	...	..	...	...	...	...	...	...	...	...
Barracks	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Bell street	...	...	1	...	5	...	...	...	...	...	...	...	...	...	...
Back Bell street	...	...	2	...	...	...	2	...	...	...	...	...	...	..	3*
Blandford street	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Blandford street west	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Blenheim street	2	...	7	...	...	...	...	...	...	...	...	...	...	...	3*
Buckingham street	...	...	5	...	...	..	...	...	...	...	...	...	...	...	2*
Beaumont street	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Bentinck street	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Brougham place	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Brunel street	...	...	...	...	..	...	...	...	...	...	...	...	...	...	1
Benwell view	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Boundary street	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Burdon terrace	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Belvidere street	..	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Bermondsey street	...	...	1	...	..	...	1	...	...	...	...	...	...	...	...
Byker bank	1	...	1	...	2	...	1	...	1	1	...	...	...	...	...
Byker hill square	1	1	...	..	...	...	...	...	...	...	...	...	...	...	...
Blue house	...	...	...	...	...	...	...	...	1	...	...	...	...	...	..
Bird's nest	...	...	..	...	...	...	...	...	...	...	...	...	...	...	1
Byker buildings	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7*
Cox's chare	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Clayton court	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1*
Chatham place	1	...	2	...	...	...	...	...	...	...	...	...	...	...	...
Clarence crescent	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Clarence street	1	...	...	...	...	...	...	...	...	..	...	...	...	...	...
Copland terrace	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Croft stairs	...	...	...	...	...	...	...	...	...	...	...	...	...	..	1
Cut bank	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Crawhall terrace	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chester street	1	...	...	...	...	...	...	..	...	...	...	...	...	...	1
Crescent place	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Clayton street	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Church street	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...
Churchill street	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Cannon street	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Clumber street	...	...	...	...	...	...	...	...	1	...	2	...	...	...	1

† Corrected by distribution of those in the Fever and Small-pox Hospitals to the districts from which each patient came.

TABLE IX.—STREET LIST OF INFECTIOUS DISEASES.—*Continued.*

NAME OF STREET.	Scarlet Fever.				Small-pox.		Typhus.		Enteric or Typ'd Fever.		Continued Fever.		Diphtheria.		Deaths from Measles regist'rd during 13 Wks. ended 29th Sept. 1883
	Cases during 3rd Qr., 1883.	Deaths during 3rd Qr., 1883.	Cases during 7 Weeks ended 17 Nov., 1883.	Deaths during 7 Weeks ended 17 Nov., 1883.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Crispin street (back)	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Crown street	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...
Clayton park road	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Clayton park square	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Collingwood terrace	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Conyers road	1	...	...	...	...	...	...	...	...	...	...	...	...	...	2*
Cook street	...	...	1	1	...	...	...	...	1	1	...	..	...	...	3
Corbridge street	...	...	...	...	..	...	...	...	...	...	...	...	...	...	3*
Dog-leap terrace	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Dyer's court	...	..	...	...	...	...	...	..	...	...	...	...	...	...	1
Day street	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Darnell street	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Diana street	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Douglass terrace	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Duke street	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
De Grey street	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Dobson street	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...
Dunn street	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Durham street	1	...	...	..	...	...	...	...	...	...	...	...	...	...	...
Dunn's cottages	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Egypt square	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...
Erick street	...	...	3	...	...	...	...	...	...	...	..	...	...	...	...
Edward street	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Elswick street	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Elswick east terrace	1	...	1	...	...	...	...	...	1	...	...	...	...	...	1*
Elswick place	3	2	...	...	...	...	...	...	...	...	...	...	...	...	...
Elswick row	...	...	...	...	4	1	..	...	...	...	...	...	...	...	...
Eskdale terrace	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Eslington terrace	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Elizabeth street	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Forth terrace	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Forth terrace (back)	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Forth street	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Falconar street	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Ford street	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Franklin street	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fern avenne	1	...	...	...	5	1	...	...	...	...	...	...	...	...	...
Fairless street	...	...	..	...	2	..	...	...	...	...	...	...	...	...	...
Garth Heads	4	1	1	...	...	...	...	...	...	...	...	...	...	...	...
Do. (Industrial dwellings)	1	...	2	...	...	...	...	...	...	...	...	...	...	...	1
Gibson street	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2
Gosforth street	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Grenville street	1	...	...	...	...	...	...	...	...	..	...	...	...	...	...
Grenville terrace	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1*
Gallowgate	4	...	2	...	...	...	...	...	...	...	...	...	..	...	...
Do. (Carnaby's yard)	...	...	1	...	...	...	...	...	...	...	...	..	...	...	...
Do. (Fleece court)	2	...	...	...	...	...	...	...	2	...	...	...	...	...	...
George street	2	1	5	1	...	...	...	...	...	...	...	...	...	...	1*
Do. (back)	...	...	1	1	...	...	...	...	...	...	..	...	...	...	...
George road	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Gloucester road	1	...	...	...	1	1	...	...	...	...	...	...	...	...	...
Gloucester terrace	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gluehouse lane	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...
Glue terrace	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Grainger low villa	...	...	2	...	...	...	...	..	...	...	...	...	...	...	...
Grove street	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Gowan villas	...	...	1	...	...	..	...	...	...	...	...	...	...	...	..
Hanover street (back)	1	...	...	...	...	...	...	..	1	1	...	...	...	...	...
Higham place	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Hunter road	3	...	...	...	...	...	...	...	...	...	1	...	...	...	...

TABLE IX.—STREET LIST OF INFECTIOUS DISEASES.—*Continued.*

NAME OF STREET.	Scarlet Fever.				Small-pox.		Typhus.		Enteric or Typ'd Fever.		Con-tinued Fever.		Diph-theria.		Deaths from Measles regist'rd during 13 Wks ended 29th Sept., 1883.
	Cases during 3rd Qr., 1883.	Deaths during 3rd Qr., 1883.	Cases during 7 Weeks ended 17 Nov., 1883.	Deaths during 7 Weeks ended 17 Nov., 1883.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
High Friar street ...	1	1	3	...	...	...	...	...	...	...	...	...	...	...	1
Heath Court ...	1	..	...	...	...	...	...	...	...	...	...	...	...	...	...
Hall's Court ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Hamilton street ...	1	...	1	...	...	...	...	...	...	...	...	...	2	...	...
Hamond street (back)...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	..
Hedley place ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Hedley street ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Hawes street ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Herbert street ...	1	...	...	...	...	...	...	...	2	1	...	...	...	...	1
Hull street ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Do. (back) ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Houston street ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Haldane terrace ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Holly avenue ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hutton terrace ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hannington street ...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Harvey street ...	...	...	4	...	5	1	...	...	...	...	...	...	...	...	1
Headlam street ...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	3*
Heaton park road ...	3	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Heaton low haugh ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Jefferson street ...	4	...	2	...	...	...	...	...	...	...	...	...	...	...	...
John street ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Jubilee road ...	...	..	3	...	...	...	...	...	...	...	...	..	...	...	...
Johnson's entry ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1*
Jesmond road ...	2	...	...	...	...	...	...	...	...	..	...	...	...	...	...
Jesmond vale ...	...	...	7	1	...	...	...	...	...	...	...	...	...	...	...
Do. (Mill street) ...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...
Jesmond grove ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Kirk street ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1
Low bridge ...	1	...	...	...	...	...	...	...	4	...	...	...	...	...	2*
Lambton place ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Leazes terrace ...	1	...	2	...	...	...	...	...	...	...	...	...	2	...	...
Liverpool street ...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	1*
Liverpool square ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Lovaine crescent ...	1	...	1	...	..	...	...	...	...	...	...	...	...	...	...
Lovaine place ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Lord street ...	...	...	1	...	...	...	...	...	...	...	1	1	...	...	...
Lily avenue ...	...	..	1	...	...	...	...	...	...	...	...	...	...	...	...
Langhorn street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Long row ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Low Fold ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Melbourne street ...	...	...	...	...	1	...	4	...	...	...	...	...	...	...	...
Milton street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Morpeth street ...	2	...	5	...	...	...	...	...	1	...	...	...	...	...	...
Moor edg, Boys' orphng.	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Market street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mansfield street ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Marlborough st. (back)	..	...	...	...	...	...	...	...	...	...	...	...	...	...	3
Moor street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Maiden street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Mather street ...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Mill lane ...	3	...	6	1	...	...	...	...	...	...	...	...	...	...	2
Mitford street ...	3	1	...	...	1	...	...	...	...	...	...	...	...	...	1*
Mawson street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Morrison street ...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...
Maling street ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Malcolm street east ...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Malcolm street ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
New road ...	1	...	3	1	...	...	...	...	...	...	...	...	...	...	1
Nixon street ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
North terrace ..	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...

TABLE IX.—STREET LIST OF INFECTIOUS DISEASES.—*Continued.*

NAME OF STREET.	Scarlet Fever.				Small-pox.		Typhus.		Enteric or Typ'd Fever.		Con-tinued Fever.		Diph-theria.		Deaths from Measles regist'rd during 13 Wks ended 29th Sept., 1883.
	Cases during 3rd Qr., 1883.	Deaths during 3rd Qr., 1883.	Cases during 7 Weeks ended 17 Nov., 1883.	Deaths during 7 Weeks ended 17 Nov., 1883.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Newgate street ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Newcombe street ...	1	...	3	...	1	...	...	...	1	1	...	...	...	...	3*
Noble street ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2*
Northcote street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Norfolk road ...	1	...	...	...	...	..	...	...	...	...	...	...	...	...	...
North view ...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...
Ouse street ...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Old Robin Hood yard...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Crawford row ...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...
Oaks square No. 2 ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Ord street ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Oystershell lane ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	2
Osborne road ...	6	...	...	...	...	...	...	...	...	...	..	...	...	...	...
Osborne villas ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Otterburn terrace ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pitman's row, Forth bks.	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Pilgrim street ...	4	...	3	...	...	...	...	...	...	...	...	...	...	...	1*
Percy street ...	2	...	...	...	...	...	...	...	1	...	...	...	...	...	1
Patterson's court ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Prudhoe pl.(No. 1 Court)	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Percy court ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1*
Prudhoe st. (Smith's crt.)	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...
Pace's buildings ...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Pilgrim street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Peel street ...	4	1	...	...	...	..	...	...	...	...	...	...	...	...	...
Peel lane ...	2	...	2	...	...	...	..	...	...	...	...	...	...	...	...
Pitt street ...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	2*
Panmure street ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Park road ...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	1
Pine street ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Palace street ...	1	...	...	...	...	...	...	...	...	...	...	..	...	...	...
Portland terrace ...	1	...	...	...	...	..	...	...	...	...	...	...	...	...	...
Parker street ...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...
Portland road ...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	1
Potts street ..	...	...	2	...	...	...	...	...	...	...	...	...	...	...	2*
Quality row ...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	1
Richmond place ...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...
Richmond street ...	...	...	3	...	1	1	...	..	...	...	...	...	...	...	1
Ridley street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Russell terrace ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Ropery cottages ...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Ridley place ...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...
Ryehill ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Railway terrace ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Railway cottage ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Ramshaw street ...	1	...	2	...	...	...	...	...	...	...	...	...	...	...	3
Rendel street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Raby street ...	...	...	4	..	...	...	...	...	...	...	...	...	...	...	...
Robinson street ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Ropery walk ...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rosedale street ...	...	...	...	...	...	...	...	...	1	...	...	...	...	..	...
Side (Hogg's yard) ..	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Stowell street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Do. (No. 1 court	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1*
Silver street ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Sandgate ...	1	...	1	1	...	...	...	...	...	...	...	...	...	...	...
Do. (Eddy's entry)..	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...
Do. (Cellars entry) ..	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Do. (Johnson's entry)	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Shieldfield green ...	...	...	1	...	...	..	...	...	...	...	...	...	...	...	...
Shieldfield lane ...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...

TABLE IX.—STREET LIST OF INFECTIOUS DISEASES.—*Continued.*

NAME OF STREET.	Scarlet Fever.				Small-pox.		Typhus.		Enteric or Typ'd Fever.		Con-tinued Fever.		Diph-theria.		Deaths from Measles regist'rd during 13 Wks ended 29th Sept., 1883.
	Cases during 3rd Qr., 1883.	Deaths during 3rd Qr., 1883.	Cases during 7 Weeks ended 17 Nov., 1883.	Deaths during 7 Weeks ended 17 Nov., 1883.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Stepney lane ...	...	...	2	1	...	..	...	...	...	...	...	...	...	...	...
St. Ann's row ...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	1
St. Ann's street ...	1	...	3	1	...	...	...	...	...	...	...	...	...	...	1*
St. Mary's street ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
St. Ann's terrace ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Sandyford road ...	3	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Sheraton street ...	2	...	1	...	...	...	...	..	...	...	...	...	...	...	...
St. Andrew's street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Spital Tongues ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Do. ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Scotswood road ...	...	...	6	...	...	...	...	...	...	...	1	...	..	...	4
Seaham street ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1*
Skinners' burn road ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Snow street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Spring garden lane ..	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...
Stanhope street ...	2	...	13	3	...	...	...	...	1	...	...	...	...	...	1
Stanton street ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Stone street ...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...
Summerhill street ...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Strickland street ...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...
Suffolk street ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Sycamore street ...	2	...	4	...	...	...	...	...	...	...	...	...	...	...	...
Sandyford road ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Shields road ...	...	...	1	...	...	...	..	...	...	...	...	...	...	...	...
Shipley street ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1*
Stoddart street ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Stepney road ...	3	...	1	...	...	...	...	..	...	...	...	...	...	..	...
Stepney square (back).	4	1	1	...	...	...	...	...	...	...	...	...	...	...	...
St. Anthony's ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
St. Peter's quay ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1*
Stratford road ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Trafalgar street ...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	1
Tyne street ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Thorpe street ...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Tulloch street ...	...	...	2	...	...	...	...	...	...	...	...	...	2	...	...
Tyneside terrace ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1*
Tamworth road ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Thornborough street ...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	3*
Turner street ...	1	...	...	...	...	...	..	...	...	...	...	...	...	...	...
Union street ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Vagrant ward ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Vincent street ...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...
Vine lane ...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
White Boar entry ...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	1*
Wrangham's entry ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1*
Westmorland terrace ...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...
Worley street ...	1	...	4	...	4	1	...	...	...	...	...	...	...	...	...
Workhouse ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Wharncliffe street ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Warkworth street ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wilfred street ...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	1
Yorkshire street ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...

* Of the above deaths from Measles, 50, or about 39 per cent., took place in one or other of the "Fever dens" specified on the Map.

TABLE X.—RATES OF BIRTH AND DEATH IN 28 GREAT TOWNS IN THE 52 WEEKS ENDED 30TH DECEMBER, 1882, FROM THE ANNUAL SUMMARY OF THE REGISTRAR GENERAL.

CITIES AND BOROUGHS.	ANNUAL RATE PER 1,000 LIVING AT ALL AGES.		Deaths under One Year to 1,000 Births.	ANNUAL RATE OF MORTALITY PER 1,000 LIVING.	
	Births.	Deaths, all Causes.		Aged 1 to 60 Years.	Aged 60 Years and upwards.
London	34·3	21·4	151	12·9	71·2
Brighton	30·6	21·7	153	12·8	71·4
Portsmouth	34·0	21·5	142	13·5	73·5
Norwich	33·9	20·6	168	9·9	64·0
Plymouth	32·2	21·2	155	11·3	74·3
Bristol	33·1	19·2	142	10·6	70·7
Wolverhampton	36·1	22·4	160	12·6	90·9
Birmingham	36·6	20·9	167	12·2	73·0
Leicester	38·6	20·1	192	9·5	65·8
Nottingham	38·1	23·6	185	13·7	58·7
Derby	35·6	18·7	139	11·0	58·6
Birkenhead	36·6	20·1	145	11·9	83·1
Liverpool	36·7	26·5	178	17·5	81·9
Bolton	36·4	23·0	172	13·9	77·1
Manchester	36·7	26·7	179	17·2	85·6
Salford	38·9	23·2	177	14·1	69·1
Oldham	34·9	24·6	180	15·5	80·0
Blackburn	38·5	25·1	195	15·0	76·8
Preston	39·7	27·6	208	15·5	89·3
Huddersfield	30·8	22·3	182	13·4	80·5
Halifax	30·0	20·4	169	11·5	88·1
Bradford	31·8	21·2	178	12·6	80·0
Leeds	36·1	23·2	179	13·9	77·4
Sheffield	37·4	21·7	165	12·8	79·7
Hull	36·6	23·2	165	14·1	69·8
Sunderland	41·2	26·5	185	16·5	69·2
NEWCASTLE	**37·2**	**23·1**	**167**	**13·9**	**77·7**
Cardiff	39·3	20·0	152	11·7	70·3
	19 below N'c. 8 above N'c.	17 below N'c. 10 above N'c.	11 below N'c. 15 above N'c.	18 below N'c. 7 above N'c.	17 below N'c. 10 above N'c.

TABLE XI.—SHOWING BIRTH- AND DEATH-RATES IN 28 GREAT TOWNS IN THE THIRD QUARTER OF 1883, FROM THE QUARTERLY REPORT OF THE REGISTRAR GENERAL.

CITIES AND BOROUGHS.	Births in 13 Weeks ending 29th Sept., 1883, per 1,000 Population.	Deaths in 13 Weeks ending 29th Sept., 1883, per 1,000 Population.	Deaths under 1 Year to 1,000 Births.	ANNUAL RATE OF MORTALITY PER 1,000 LIVING.	
				Aged 1 to 60 Years.	Aged 60 Years and upwards.
London	32·8	18·8	177	10·7	53·1
Brighton	27·8	19·4	240	9·7	51·3
Portsmouth	34·3	18·9	180	9·3	70·8
Norwich	30·9	17·6	184	7·3	56·4
Plymouth	30·7	18·8	178	10·3	51·0
Bristol	30·7	15·3	134	8·4	51·3
Wolverhampton	35·8	18·6	169	9·8	64·7
Birmingham	33·4	20·5	205	11·6	59·1
Leicester	35·0	18·8	264	6·9	51·7
Nottingham	38·2	19·6	204	9·4	46·4
Derby	35·1	15·6	154	7·9	47·1
Birkenhead	34·8	16·3	150	8·4	72·5
Liverpool	33·4	24·8	226	15·6	61·0
Bolton	33·9	19·6	185	10·9	66·2
Manchester	34·9	24·9	205	15·0	79·0
Salford	34·5	21·2	201	12·1	63·3
Oldham	34·2	18·2	145	11·2	58·1
Blackburn	37·9	19·5	142	11·2	75·0
Preston	37·2	24·8	257	12·4	67·0
Huddersfield	29·0	19·1	165	10·9	77·2
Halifax	27·8	15·0	109	8·8	72·2
Bradford	28·2	16·4	154	9·1	75·4
Leeds	35·3	21·2	191	12·2	62·1
Sheffield	36·4	21·8	206	12·4	61·2
Hull	35·9	18·0	157	9·9	53·9
Sunderland	42·7	27·6*	153	18·9	69·4
NEWCASTLE	**35·2**	**27·1**	**211**	**16·9**	**76·8**
Cardiff	40·5	17·3	146	9·5	56·5
	18 below N'c. 9 above N'c.	26 below N'c. 1 above N'c.	23 below N'c. 4 above N'c.	26 below N'c. 1 above N'c.	25 below N'c 2 above N'c.

* Owing to the Disaster at the Victoria Hall.

TABLE XII.—ADDRESS AND NUMBER OF ROOMS OCCUPIED BY EACH FAMILY IN WHICH MORE THAN ONE CASE OF INFECTIOUS DISEASE HAS BEEN NOTIFIED, FROM 11TH OCTOBER TO 15TH NOVEMBER, 1883, INCLUSIVE.

STREET, &c.	Number of Cases.	Disease.	STREET, &c.	Number of Cases.	Disease.
No. — Scotswood Road	2	Scarlet Fever	No. — Fleece Court ...	2	Scarlet Fever
„ „ Do. ...	2	„	„ — Yorkshire Street	3	Enteric Fever
„ — Blenheim Street	4	„	„ — Portland Road...	3	Scarlet Fever
„ — Mill Lane ...	2	„	„ — Richmond Street	2	„
„ — Sycamore Street	2	„	„ — Eddy's Entry, Sandgate ...	2	„
„ — Dobson Street ...	3	„	„ — Erick Street ...	2	„
„ — Crown Street ...	4	„	„ — Vincent Street...	3	„
„ — Buckingham St.	2	„	„ — Pilgrim Street...	2	„
„ — Do.	2	„	„ —Chapel Buildings Buxton Street..	2	„
„ — Jefferson Street..	2	„	„ — Morrison Street	2	„
„ — Oystershell Lane	2	Enteric Fever	„ — Jesmond Vale ...	2	„
„ — Stanhope Street	3	Scarlet Fever	„ „ Do. ...	2	„
„ „ Do.	6	„	„ — Wilfred Street...	2	„
„ — Worley Street ...	4	„	„ — Raby Street ...	4	„
„ — Spring Garden Lane	2	„	„ — Tulloch Street...	2	„
„ — Morpeth Street..	4	„			
„ — Leazes Crescent	2	Contin'd Fever			

TABLE XII.—*Continued.*

SUMMARY OF FOREGOING.

TENEMENTS.	Number of Families.	Number of Cases.	Per Cent. to Total.
Consisting of 1 Room	4	8	10
Do. 2 Rooms	13	32	40
Do. 3 Rooms	8	24	30
Do. 4 Rooms	2	4	5
Do. more than 4 Rooms ...	2	6	$7\frac{1}{2}$
Number not stated	3	6	$7\frac{1}{2}$
	32	80	100

NUMBER OF HOUSES IN ABOVE RETURN IN WHICH NO PRECAUTIONS* WERE BEING TAKEN TO PREVENT SPREAD OF INFECTION.

Single room tenements	2,	with 5 cases
Two do. do.	6,	„ 15 „
Three do. do.	3,	„ 6 „
Four do. houses	2,	„ 5 „
Total	13	31 „

* The "precautions" taken in many of the remaining cases were of the most imperfect and slender character, often being limited to the use of a little disinfectant in the sick room.

Scarlet Fever has been very prevalent (single cases) in several families in Chapel Buildings and other places. (See Street List, Appendix B., Table IX.)

N.B.—This Table was made on November 17th from returns up to November 15th, so that there may afterwards be other double, &c., cases (not yet developed) in other tenement houses already infected.

Three cases only of the above were removed to Hospital. In all the others, the proposal to remove the patient was not agreed to by friends.

TABLE XIII.—RETURN OF STREETS IN WHICH DEATHS OCCURRED FROM THE FOLLOWING DISEASES DURING THE 13 WEEKS ENDING 29TH SEPTEMBER, 1883.

N.B.—The Streets distinguished by an Asterisk (*) are within the "Fever-Den" Areas given on the Plan accompanying this Report.

SCROFULA.

WESTGATE REGISTRATION SUB-DISTRICT—
- Gloucester Road.
- Mitford Street.*
- Hawes Street.
- Beaumont Street
- Villa Place.
- Cross Parade.
- George Street.*
- Hammond Street.*
- Kyle Place.
- Sunderland Street.
- Worley Street.
- Lefroy Street.
- Clumber Street.
- Elswick Street.*
- Bell Terrace.
- Sydney Grove.

ST. ANDREW'S REGISTRATION SUB-DISTRICT—
- Nil.

ST. NICHOLAS' REGISTRATION SUB-DISTRICT—
- Queen's Lane.*

ALL SAINTS' REGISTRATION SUB-DISTRICT—
- Wesley Street.
- Clarence Crescent.
- Scott's Entry, Sandgate.*

BYKER REGISTRATION SUB-DISTRICT—
- Addison Road.
- Malcolm Street.
- Clifford Street.
- Maling Street.
- Fairless Street.
- Windsor Terrace.
- Osborne Road.

TABLE XIII.—RETURN OF STREETS IN WHICH DEATHS OCCURRED.—*Continued.*

TABES MESENTERICA.

WESTGATE REGISTRATION SUB-DISTRICT—
Stanhope Street.
Jefferson Street.
Hamilton Street.
Hamilton Street.
Mansfield Street.
Cookson Street.
William Street.
Stanton Street.
Workhouse (2 deaths)
Sycamore Street.
Suffolk Street.
Railway Street.
Blenheim Street.*

ST. ANDREW'S REGISTRATION SUB-DISTRICT—
Bulmer Street.

ST. NICHOLAS' REGISTRATION SUB-DISTRICT—
Tuthill Stairs.

ALL SAINTS' REGISTRATION SUB-DISTRICT—
Wood Entry, Sandgate.*
Wood Entry, Sandgate.*
Seller's Entry, Sandgate.*
New Road.
Forster's Court, Pilgrim Street.

BYKER REGISTRATION SUB-DISTRICT—
Ballast Hills.
St. Peters.*
Conyers Road.*
Corbridge Street.*
Parker Street.*

NEPHRITIS.

WESTGATE REGISTRATION SUB-DISTRICT—
Back Villa Place.
Wellington Street.
Hamilton Street.
Crispin Street.*

ST. ANDREW'S REGISTRATION SUB-DISTRICT—
Hunter's Road.

ST. NICHOLAS' REGISTRATION SUB-DISTRICT—
Children's Hospital.

ALL SAINTS' REGISTRATION SUB-DISTRICT—
New Road.
Grenville Street.*

BYKER REGISTRATION SUB-DISTRICT—
Nil.

KIDNEY DISEASES, &c.

WESTGATE REGISTRATION SUB-DISTRICT—
Scotswood Road.
Scotswood Road.
Herbert Street.
Gloucester Terrace.
Back George Street.*
Victoria Street.

ST. ANDREW'S REGISTRATION SUB-DISTRICT—
Percy Street.

ST. NICHOLAS' REGISTRATION SUB-DISTRICT—
Infirmary (4 deaths).

ALL SAINTS' REGISTRATION SUB-DISTRICT—
Jesus Hospital.
Napier Street.

BYKER REGISTRATION SUB-DISTRICT—
Byker Hill.

PREMATURE BIRTH.

WESTGATE REGISTRATION SUB-DISTRICT—
Nesham Street.
Byron Terrace.
Byron Terrace.
Elswick East Terrace.*
Bath Lane.
Hill Street.*
Wellington Street.
Park Road.
Mitford Street.*
Railway Terrace.

ST. ANDREW'S REGISTRATION SUB-DISTRICT—
Nil.

ST. NICHOLAS' REGISTRATION SUB-DISTRICT—
Monk Street.*
Stowell Street.*
St. Nicholas' Church Yard.

ALL SAINTS' REGISTRATION SUB-DISTRICT—
Gibson Street.*
Temperance Row.
Dean Court, Pilgrim Street.

BYKER REGISTRATION SUB-DISTRICT—
Langhorn Street.
Robinson Street.
Shields Road.*
Crawford's Row.
St. Anthony's.*

TABLE XIII.—RETURN OF STREETS IN WHICH DEATHS OCCURRED.—*Continued.*

ATROPHY AND DEBILITY.

WESTGATE REGISTRATION SUB-DISTRICT—
- Stone Street.
- Bell Street.
- Back Tindal Street.
- Buckingham Street.*
- Wellington Street.
- Spring Street.
- Summerhill Terrace.
- Bath Lane Terrace.
- George Street.*
- Back George Street.*
- George Street.*
- Back Marlborough Street.
- Blenheim Street.
- Blenheim Street.*
- Blenheim Street.*
- Oak Street.
- Dunn Street.
- Bowman Street.
- Mitford Street.*
- Newcombe Street.
- Tyneside Terrace.*
- Gloucester Road.
- Cambridge Street.
- Glue Terrace.
- Handyside Street.*
- Gainsborough Road.

ST. ANDREW'S REGISTRATION SUB-DISTRICT—
- Smith's Court, Prudhoe Street.
- Liverpool Street.*
- Harrison Place.
- Clarence Place.
- Croft Court.
- Pilgrim Street.
- Mackford's Entry.*
- Leazes Terrace.

ST. NICHOLAS' REGISTRATION SUB-DISTRICT—
- High Bridge.
- Denton Chare.
- Back Hanover Street.
- Wilson's Court, Groat Market.
- Shipley's Court, Bigg Market.
- Black Bull Entry, Forth Banks.
- Monk Street.*

ALL SAINTS' REGISTRATION SUB-DISTRICT—
- Industrial Dwellings.
- Melbourne Street.
- Melbourne Street.
- Little Blagdon Street.*
- Chatham Place.
- Turner Street.
- Albert Street.
- Elwick's Lane.
- Tyne Street.
- Scott's Entry, New Road.*
- New Road.
- Croft Stairs.
- Silver Street.*
- Forster's Court.
- Painter Heugh.
- Side.

BYKER REGISTRATION SUB-DISTRICT—
- Byker Street.
- Conyers Road.*
- Wilfred Street.
- Corbridge Street.*
- Shipley Street.*
- Burton Street.
- Quality Row.*
- Albion Row.*
- St. Peter's.*
- Turner Street.
- Rosedale Place.
- Rosedale Street.*
- Harriett Street.
- Bryson Terrace.*
- Bryson Terrace.*
- Heaton Park Road.
- Moor View.

PNEUMONIA.

WESTGATE REGISTRATION SUB-DISTRICT—
- Beaumont Street.
- Scotswood Road.
- Sycamore Street.
- Herbert Street.
- Penn Street.
- Duke Street.
- Ord Street.
- Elswick East Terrace.*
- Westgate Road.
- Edward Street.
- Hill Street.*
- Pitt Street.*
- Nellis Court, Seaham Street.*
- Ramshaw Street.
- Jefferson Street.
- Peel Street.*
- Hawthorn Terrace.
- Meldon Street.
- Meldon Street.

ST. ANDREW'S REGISTRATION SUB-DISTRICT—
- Winship's Court.
- Prudhoe Street.
- Carnaby's Yard, Gallowgate.

ST. NICHOLAS' REGISTRATION SUB-DISTRICT—
- Infirmary.

ALL SAINTS' REGISTRATION SUB-DISTRICT—
- New Road.
- Horatio Street, New Quay.
- Stepney Lane.
- Industrial Dwellings.
- Canada Street.
- Kent Street.
- Crawhall Terrace.
- Carliol Street.
- Dean Court, Dean Terrace.

BYKER REGISTRATION SUB-DISTRICT—
- Rosedale Street.*
- Byker Street.
- Kirk Street.
- Harriett Street.
- Grafton Street.
- Dunn's Terrace.
- Corbridge Street.*
- Tynemouth Road.
- St. Lawrence.
- Quality Row.*

TABLE XIV.—NEWCASTLE-UPON-TYNE.—RETURNS EXTRACTED OR PREPARED FROM THE CENSUS TABLES, 1881.

Area (Municipal), 5,371 acres; the built portion is about half of this. Inhabited houses at Census of 1881, 20,264, or 3·8 houses per acre (entire City). Persons at Census of 1881, 145,359, or 27·1 persons per acre (entire City), and 7·2 persons per house.

REGISTRATION SUB-DISTRICTS.	PARISH, &c., OR TOWNSHIP.	Acres.	Inhabited Houses.	Families or Separate Occupiers.	Persons.	Houses per Acre.	Persons per House.	Person per Acre.
*Westgate	Elswick	807	4,486	7,062	34,642	5·6	8·5	42·9
	Westgate ...	225	3,288	5,923	26,823	14·6	8·1	119·2
		1,032	7,774	12,985	61,465	7·5	7·9	59·5
St. Andrew's ...	St. Andrew's ...	1,440	2,666	4,051	18,371	1·9	6·9	12·7
St. Nicholas'	St. John's ...	87	808	1,196	5,709	9·3	7·1	65·6
	St. Nicholas' ...	44	521	789	4,319	11·8	8·3	98·2
		131	1,329	1,985	10,028	10·1	7·5	76·6
All Saints' ...	Part of All Saints'	210	3,259	5,845	24,424	15·5	7·2	116·3
Byker	Part of All Saints'	70	271	...	2,125	4·0	7·8	30·3
	Byker	879	3,714	4,486	21,011	4·2	5·7	23·9
	Heaton	909	265	277	1,466	0·3	5·5	1·6
	Jesmond... ...	700	986	1,051	6,109	1·4	6·2	8·7
		2,558	5,236	5,814	30,711	2·0	5·9	12·0

* Excluding Benwell and Fenham.

TABLE XV.

REGISTRATION SUB-DISTRICTS.	PARISHES, &c.	Families to Inhabited Houses.	Persons to a Family.	Families per Acre.
*Westgate ...	Elswick	1·6	4·9	8·7
	Westgate	1·8	4·6	26·3
St. Andrew's	St. Andrew's ...	1·5	4·6	3·5
St. Nicholas' ...	St. John's	1·5	4·8	13·7
	St. Nicholas' ...	1·5	5·5	17·9
All Saints'	Part of All Saints'.	1·7	4·5	12·6
Byker	Part of All Saints'.	...	...	...
	Byker	1·2	4·7	5·1
	Heaton	1·0	5·3	0·3
	Jesmond	1·0	5·8	1·5

* Excluding Benwell and Fenham.

CITY OF NEWCASTLE UPON TYNE.

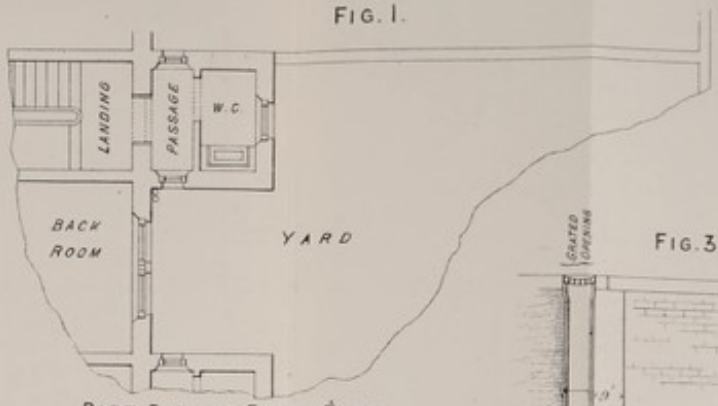
A.D. 1881.

PLAN OF SANITARY ARRANGEMENTS

RECOMMENDED FOR THE

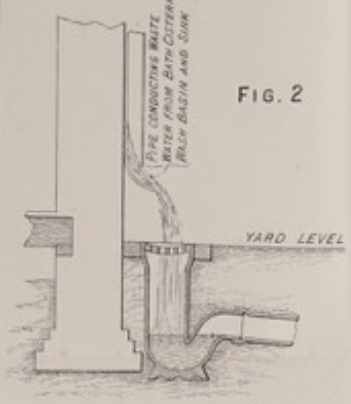
EXCLUSION OF SEWER-GAS FROM HOUSES.

FIG. 1.

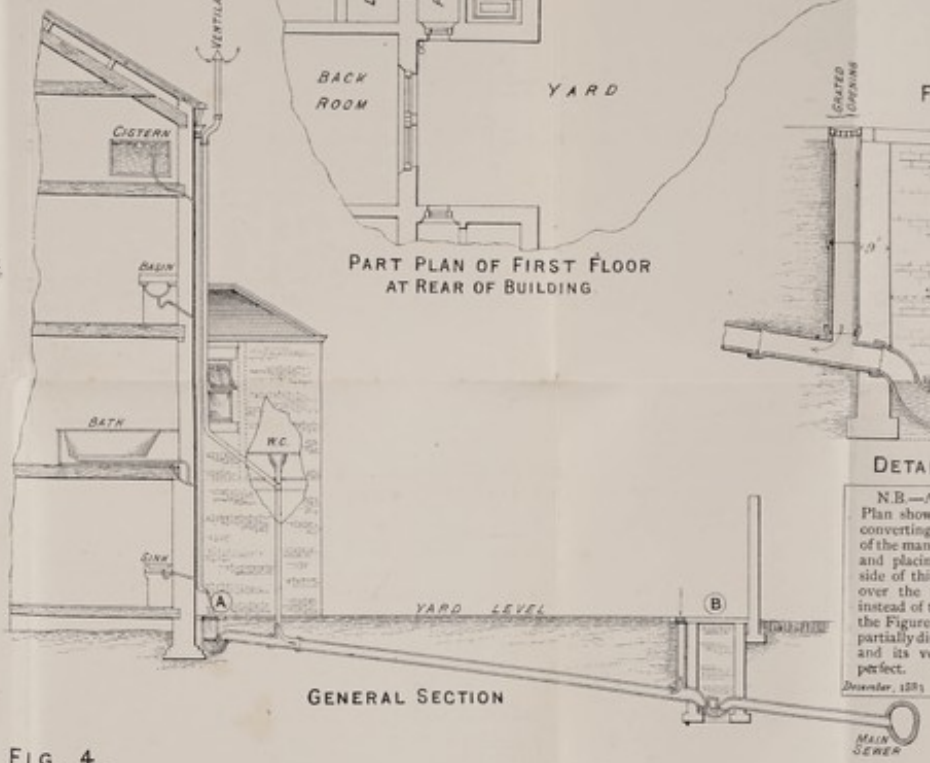


PART PLAN OF FIRST FLOOR AT REAR OF BUILDING

FIG. 2

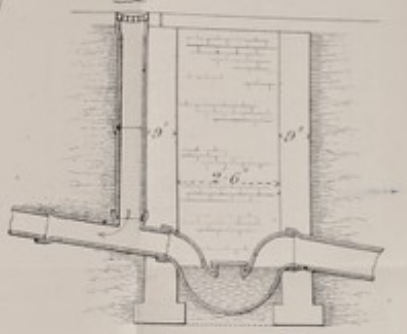


DETAIL AT (A)
on General Section



GENERAL SECTION

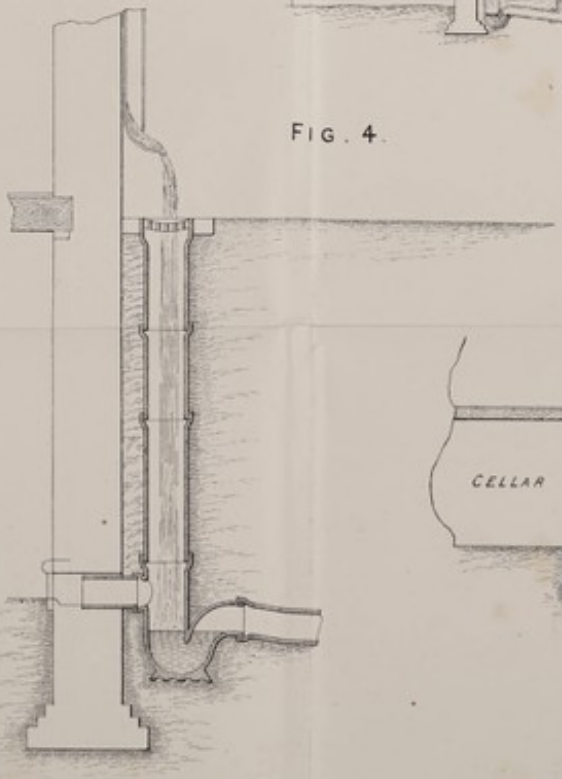
FIG. 3.



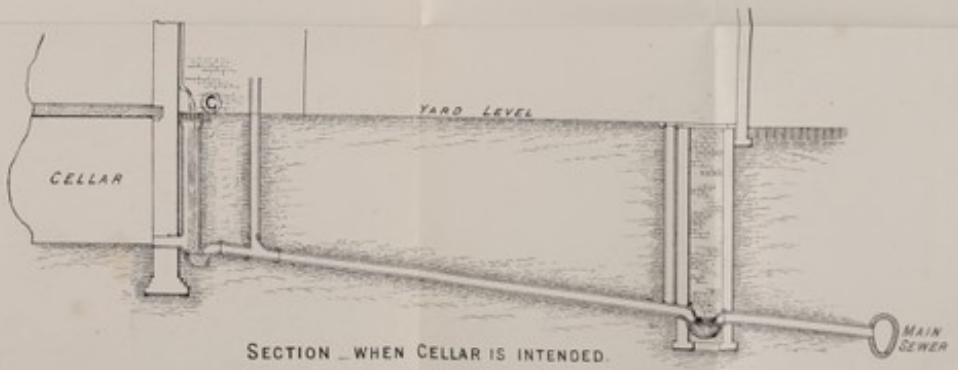
DETAIL AT (B)

N.B.—An improvement on the Plan shown in Fig. 3 is effected by converting the drain across the floor of the manhole into an open channel and placing the trap at the lower side of this channel, and a grating over the manhole for ventilation instead of the 9-inch pipe shown in the Figure. The drain will then be partially disconnected from the sewer and its ventilation will be more perfect. H. E. A.
December, 1881

FIG. 4.



DETAIL AT (C)



SECTION WHEN CELLAR IS INTENDED

Scale to General Sections

Scale to Large Details


PLAN
OF THE CITY OF
NEWCASTLE upon TYNE.
1883.
EXPLANATION.
A.D. 1873-82.
NEWCASTLE UPON TYNE
PRINCIPAL
FEVER DENS.
1873 SCARLET FEVER
1874 SCARLET & ENTERIC FEVERS (CHIEFLY THE FORMER)
1875 SCARLET & ENTERIC FEVERS (CHIEFLY THE FORMER)
1876 SCARLET & ENTERIC FEVERS (CHIEFLY THE FORMER)
1877 SCARLET & ENTERIC FEVERS (CHIEFLY THE FORMER)
1878 SCARLET & ENTERIC FEVERS
1879 SCARLET FEVER & MEASLES
1880 SCARLET FEVER
1881 SCARLET ENTERIC & TYPHUS FEVERS
1882 SCARLET ENTERIC & TYPHUS FEVERS AND SMALL POX
N.B. This Map shews only the worst localities in which Zymotic Disease has prevailed during the decade.
Medical Officer of Health

CITY AND COUNTY OF NEWCASTLE-UPON-TYNE.

INFECTIOUS DISEASE INQUIRY FORM.

N.B.—Wherever possible the information is to be given by STRIKING OUT the Words or Syllables not required in the Report.

Date of Inquiry _____ 188_

Name of Patient _____ *Age* _____ *Occupation* _____

Address _____

Disease _____ *Date of first feeling of Illness* _____

No. of Household aged 12 *years and upwards* _____ *No. of Children under* 12 *years of age* _____

No. of Dwelling Rooms _____ *Sick Room isolated from other part of House, well—moderately—imperfectly—not at all.*

What precautions are being taken to prevent spread of infection? _____

Is removal to Hospital agreed to? _____

Patient's Occupation _____ *at* _____

Other Residents in house are occupied at _____

Suspected source of infection _____

Other recent cases of the disease in the family, or amongst relatives, &c.? _____ *or neighbours?* _____

If so, how many? _____

Has any person from an infected family visited at the house lately? _____

If so, state name and address _____

Milk obtained from _____

Children of family attend—Day School at _____ *Sunday School at* _____

Name and address of Laundress _____

Have any Clothes or other articles liable to convey infection been purchased within a fortnight of the patient taking ill? _____

If so, from whom? _____

Any sickness at either of the above-named? _____ *If so, what and where?* _____

Is any business or trade carried on on the premises whereby infection may be communicated to the customers or the public? _____

If so, what? _____

In what other way is infection liable to be spread? _____

Sanitary Condition of the Premises, &c.:—

(A) Overcrowding? _____ *state particulars* _____

(B) Ventilation of house—good—fair—indifferent—bad. Ventilation of rooms—good—fair—indifferent—bad.

(C) Premises clean—dirty.

In case of Enteric Fever, particular attention to be paid to the following:—

(D) Ashpit _____ *feet distant from window—door, open—covered?* _____ *wet—dry—foul?* _____ *Any other nuisance in connexion therewith?* _____

(E) Yard paved or cemented. If neither, what state is the ground in? _____

(F) Animals kept on premises _____

Drainage—*Under house, to front—back* _____

Drain of glazed pipe, brick, other materials, viz.: _____ *watertight, obstructed—free? Improperly trapped. If so, state defect* _____

Drain ventilated by _____ *inch pipe, connected with interior of house by W.C., sinks—baths—lavatory—cistern waste. If any such connexion exists, describe the condition of the trap* _____

W.C., Privy—Ash-Closet in yard, _____ *feet distant from door—window. Ventilation good—fair—indifferent—none.*

W.C. in interior _____ *Soil-pipe inside—outside—good—defective. State defects* _____

Smells complained of? _____

Pan or other form of W.C. State which _____ *Soil-pipe properly ventilated by* _____ *inch pipe.*

Any other nuisance on premises? _____

Water Supply.—*By well?* _____ *Liable to pollution?* _____ *Distance from Ashpit, &c.* _____

By Tap? _____ *Supply constant or intermittent?* _____ *Through cistern—direct from main?* _____

Complaint of _____

Supply for drinking drawn from same cistern as that used for flushing W.C.? _____

Position of cistern? _____

Cistern uncovered? _____ *Clean—foul?* _____

Waste pipes from cistern and safe trays disconnected from soil-pipe and drain? _____

Probability of water on premises being contaminated with sewer gas or sewage? _____

Probability of patient having lately drunk impure water from any other source? _____

Milk.—*Probability of patient having lately drunk infected or contaminated milk?* _____

If so, where? _____ *and when?* _____

(Signed) _____

DISINFECTOR.

* Particular attention to be paid to this in case of Typhus.