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REPORT
ON
THE SANITARY CONDITION
OF
BIRKENHEAD,

For the Year 1870.



BY

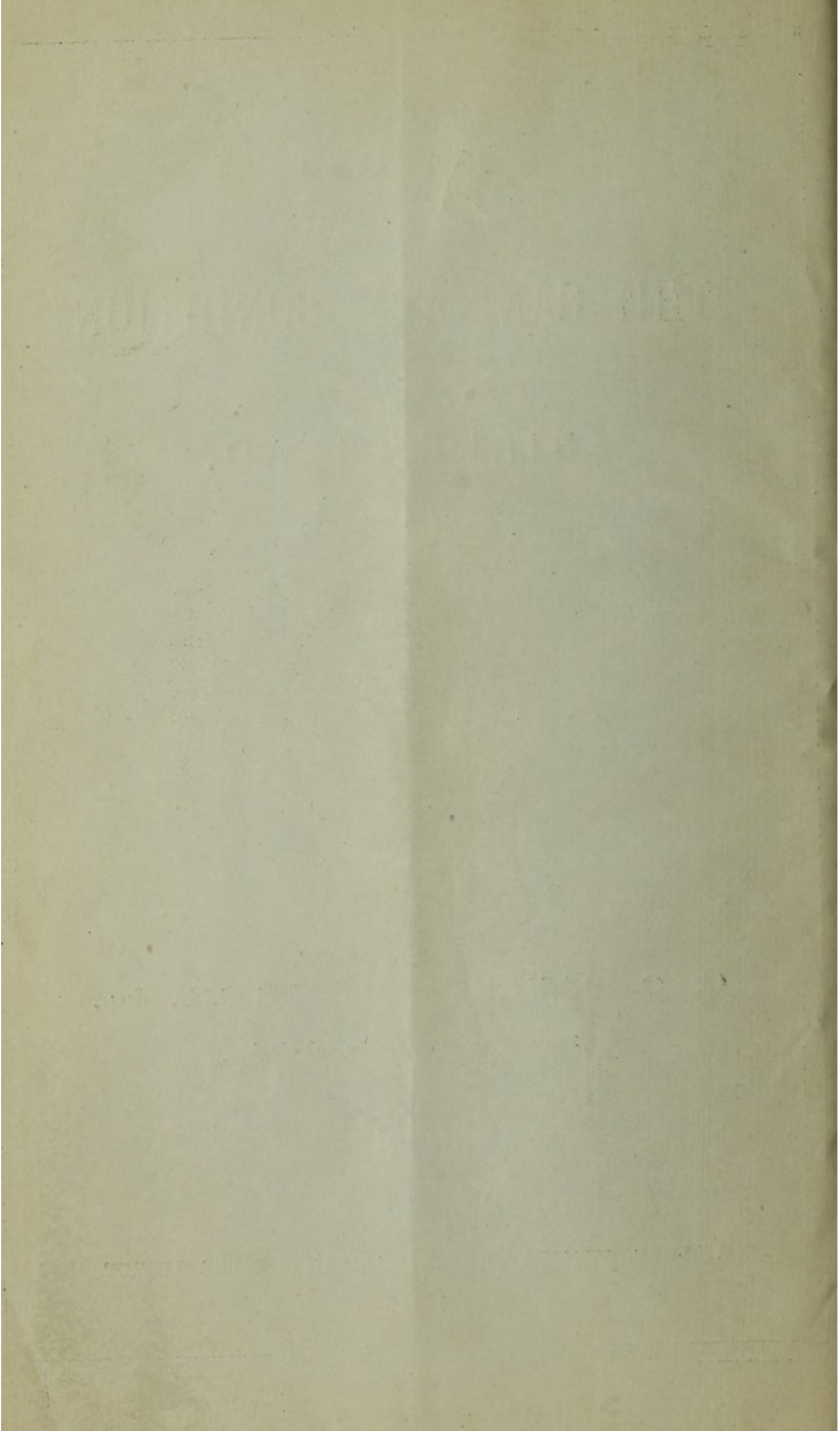
C. O. BAYLIS, M.D., M.R.C.S., &c.,

Medical Officer of Health for Birkenhead.

BIRKENHEAD:
WILLMER, STEAM PRINTER, 64 AND 66, CHESTER STREET.

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REPORT
OF
THE SANITARY COMMISSION
HEALTH COMMITTEE
OF THE
BIRKENHEAD COMMISSIONERS
FOR 1870-71.

BRAITHWAITE POOLE, JUN., Esq., CHAIRMAN.

MR. JOSEPH BRATTAN.

„ FREDERICK FORREST.

„ GEORGE HARRISON.

„ WILLIAM WALKER.

„ JOHN R. WILLIAMS.

THE SANITARY STATE
OF
BIRKENHEAD AND CLAUGHTON,
DURING 1870.

Report of the Medical Officer of Health to the
Health Committee.

The present Annual Report has been somewhat deferred, in order to make use of the element of accuracy just furnished by the census of April, 1871. The possession of this important, but too infrequent test, will also explain the special attention given to the vital statistics made up since the previous census of 1861, as well as justify the investigation entered into with respect to the remarkable flow and ebb of the local population. The latter subject will be first discussed.

NECESSITY OF A MORE FREQUENT CENSUS.

There can be no doubt that the more vigorous evolution of the various problems of political, economic, and social life springing out of the vastly increased national development demand a more frequent general census than the present decennial one. Especially is this the case in sanitary questions, which require for their solution a true death rate, which can only be arrived at by a tolerably certain knowledge of the annual population; this latter is, at present, provisionally estimated in the office of the Registrar-General, by assuming a rate of increase (or otherwise), proportionate to that averaged between the two previous censuses, until the succeeding one furnishes the proper means of correction. These provisional estimates, however, become increasingly unreliable after the first few years of the decade, and the resulting death rate then becomes less and less to be depended on.

A QUINQUENNIAL CENSUS INDICATED.

Another defect attaches to the present infrequent system, because it entirely fails to register any conjoined rise and fall of the population, if either continue for a less time than the decennial period, for instance, from local sources of information it is demonstrable that the population of Birkenhead (and Claughton) rose from the census number of 37,796 in 1861 to 54,000 in 1866, and, from that time to the census of the present year, it decreased to 45,034; yet there is not the slightest indication of this important aberration in the present decennial return, though a quinquennial one would have assuredly registered it, and furnished other more reliable data for resolving the various sanitary questions.

MODE OF ESTIMATING THE LOCAL ANNUAL POPULATION.

Since the appointment of a Medical Officer of Health for Birkenhead, in 1864, the annual variations of population have been carefully investigated, and these variations are recorded in the annual sanitary reports. Starting from the general census, they are then based on the difference in number of the houses found occupied at the middle period of each year, multiplied by the census rate per house, and the result successively added (or otherwise) to the previous annual computation. This method is accurate enough during a progression equal to that in which the general census was taken, but fails when retrogression of population sets in, because the tension of crowding, caused by high rents and deficient accommodation, then gives way, and a lower rate per house than the census rate becomes the actual one; it is quite possible, however, by a re-census of known and representative streets, to obtain the ratio of its diminution, and then make the necessary correction.

RECORD OF THE ANNUAL POPULATION.

The annual estimates, thus computed and registered, are again recorded in the following table, together with the corresponding number of deaths for each year, the number of occupied and unoccupied dwellings, and the average rate per dwelling, nearly all of which so far agree proportionately as to afford the strongest confirmation of the correctness of the population estimates previously arrived at.

Decennial Table of the Local Population, &c.

Year.	Population.	Dwellings inhabited.	Rate per Dwelling.	Total Dea'hs.	Non-Zymotic Deaths.	Dwellings uninhab'd.
1861	37,796	4885	7.7	751		353
1862				920	(1)	
1863				1103		
1864 (2)	51,396	6615		1254	791	531
1865	53,000	6960		1133	835	349
1866	54,000	6988	7.7	1217	824	452
1867	52,826	6837		1101	786	689
1868	51,000 (3)	6763	7.5	1074	716	815
1869	47,000	6740	6.9	929	643	866
1870 (4)	45,000	6754	6.6	855	691	875
1871	April Third. 45,034		6.6			895 (5)

RISE AND TEMPORARY FALL OF POPULATION ACCOUNTED FOR.

The rise of the population to its highest point, in 1866, and the lesser fall to its lowest point, in 1870, are due to a remarkable coincidence of depressing commercial and local causes. Intimately bound up with Liverpool, Birkenhead participated, to the end of 1866, in the results of a general commercial prosperity, sound enough in itself, but exceptionally stimulated and exaggerated by the profuse employment, and ultimate waste of the capital drawn out by the numerous limited liability companies, then first starting into existence. The inevitable collapse occurred in 1866 and 1867, and confidence is even now only being fully restored. But the

(1) This series of deaths is given, because, by getting rid of the uncertain zymotic element they more nearly follow the variations of population.

(2) The mortality for this year was exceptionally great, owing to the extreme prevalence of small-pox and other zymotic diseases, which alone carried off no less than 460 persons.

(3) This number, 51,000, was not arrived at when the report for the year was drawn up, but was given as revised in a note at page 7 in the report of the following year. The overcrowding which existed up to and during 1866 declined rapidly from 1868 to 1870, but its first decline was not immediately recognised.

(4) All signs of overcrowding disappeared this year.

(5) Besides some new houses included in this return, there are barrack dwellings in Jackson-street, Brougham-street, &c., counted by their dwellings, which are only counted as individual buildings in the other or township returns in the column above it.

local causes were still more serious, for the continued expenditure of so many millions sterling on the great dock works came to an end in 1869, and the numbers of workmen employed on them fell off from 1,750 ⁽¹⁾ in the middle of 1867 to 330 in 1869, the latter being soon afterwards entirely discharged. These workmen, which represented, with their wives and families, in 1867, a population of 7,000 within the town and neighbourhood, had all ultimately to migrate elsewhere, leaving not only a gap in the general population, but heavy losses and derangements in the business affairs of the town. The zero was reached in the middle of 1870, when the population was reduced to 45,000, or a trifle less than the census number of April, 1871.

DEATHS AND BIRTHS DURING 1870.

The total number of deaths registered was 855, of which 434 were those of males, and 421 of females. The births registered amounted to 1792, which included 889 males and 903 females.

THE DEATH AND BIRTH RATE.

The certain knowledge of the population number afforded by the proximity, as to time, of the census, gives to the death and birth rates of 1870 an indisputable accuracy. The population in the middle of the year being 45,000, and the number of deaths 855, the resulting death rate is exactly 19 per 1,000 per annum. The birth rate, also, is equally propitious, amounting, as it does, to 39·82, or very nearly 40 for every 1,000 of the inhabitants.

REGISTRAR-GENERAL'S DEATH RATE OF THE PARLIAMENTARY BOROUGH.

In his Annual Summary for the year 1870, just pulished, the Registrar-General, though not aided as he ought to be, by, at least, a quinquennial, if not an annual census, computes the death rate for the Birkenhead Parliamentary district, including Tranmere, Oxton, &c., to be as low as 17 per 1000, and places this Borough

⁽¹⁾ The number of workmen had previously reached 3000.

at the head of all the 67 chief towns in England, in respect of lowness of the death ratio ⁽¹⁾.

AN INTER ANGLICAN COMPARISON FOR 1870.

Name of Area.	Death Rate.	Birth Rate.
(²) All England, per 1000.....	23.34 ...	35.86
(²) Town Districts	24.75 ...	
(²) Country Districts.....	21.47 ...	
(³) Birkenhead.....	19.00 ...	39.82

ANALYSIS OF THE MORTALITY DURING 1870, IN BIRKENHEAD, COMPARED WITH THAT AVERAGED FROM THE 17 PRINCIPAL TOWNS OF ENGLAND.

Locality.	Total Annual Death Rate per 1000	D'th Rt. from the 7 chief Zymotes per 1000.	Percentage of Deaths under 1 year to Births.	Perc'ntge of deaths to total deaths			
				Under 1 year of Age.	Above 60 years of Age.	From the 7 chief Zym'tes.	From violence
Birkenhead ⁽³⁾	19.0	3.6	14.2	29.8	12.4	14.2	5.3
17 Chief Towns ⁽⁴⁾	25.0	5.5	18.3	26.4	18.7	22.1	3.2

MORTALITY OF THE FOUR QUARTERS.

In the first, or winter, quarter were registered 218 deaths. In the spring quarter 162; and in the summer and autumn quarters 211 and 264 deaths respectively. Of these 44, 29, 48, and 43, in the 1st, 2nd, 3rd, and 4th quarters respectively, were due to zymotic diseases. The corresponding rates per 1000 per annum, with the corresponding ones averaged of the previous six years, are given below.

(Note 1.) The same Report, viz., Registrar-General's Annual Summary of 1870 also gives Liverpool as being one of the towns having the highest rate of mortality, so that we have two Boroughs only separated by a river (here within a mile in width) which give the highest and lowest death rates in all England.

(Note 2.) Registrar General's Fourth Quarterly Report for 1870. The rates are based on estimated populations, but are safe for being near approximations.

(Note 3.) On population confirmed by the recent Census.

(Note 4.) Registrar-General's Annual Summary, 1870.

TABLE.

DEATHS.	ANNUAL RATE PER 1000, PER ANNUM.				
	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Year.
All Causes—1870	19·3	14·4	18·7	23·4	19·0
Average of previous 6 years	23·2	18·9	20·8	23·9	21·6
Zymotic Causes—1870....	3·9	2·5	4·2	3·8	3·6
Average of 6 previous years	6·6	5·3	7·7	7·5	6·8

Table, giving the Deaths of 1870 and the six preceding years, in Classes arranged in Five Groups.

DEATH CAUSES IN CLASSES AND GROUPS.	Years.						
	1864	1865	1866	1867	1868	1869	1870
1. Zymotic Group	463	298	393	315	358	286	164
2. Constitutional Diseases :							
Gout, Cancer, &c.....	38	38	29	35	24	23	32
Scrofula, Phthisis, &c.	135	174	161	146	137	119	143
3. Local Diseases :							
Brain, &c.	107	117	93	120	117	104	105
Heart, &c.	24	34	36	34	26	40	36
Lungs, &c.	172	160	199	183	159	120	142
Stomach, &c.	46	43	42	30	23	37	38
Kidneys, &c.....	7	18	14	11	11	10	12
Uterus, &c.	2	4	3	1	2	0	0
Bones, &c.	6	4	1	2	1	4	5
Skin, &c.	7	1	3	8	6	5	7
4. Developmental Diseases, &c. :							
Premature Birth, Atrophy, and Debility*...	128	124	139	129	119	85	74
Childbirth.....	6	6	4	4	7	8	3
Old Age	37	34	33	25	25	35	35
5. Violent Deaths	61	51	46	42	49	37	46
Causes not specified.....	15	27	21	16	10	16	13
Totals	1254	1133	1217	1101	1074	929	855

NOTE.—* Atrophy and Debility are included, to obviate the effect of some changes in the compilation.

RESPONSIBILITY OF THE COMMUNITY FOR ZYMOTIC DEATHS.

The names sufficiently explain the classes and groups of the previous table. Now, it is well known that while sanitary measures affect, favourably, the mortality in every group, they alone decisively control, diminish, and might even extirpate the maladies of the first or Zymotic group. People may die in a sort of semi-natural course, from constitutional, local, or developmental disease; or they may be killed off by violence; but for every Zymotic death the community itself is more or less responsible—for the community alone, and not the individual, can adopt the requisite safe-guards. The following is a seven years' analysis of the Zymotic group.

Table, shewing the absolute numbers of the various Zymotic Deaths in Birkenhead for Seven Years.

	1864	1865	1866	1867	1868	1869	1870
Small Pox	123	37	1	...	...	...	2
Measles	78	21	36	23	26	72	1
Scarlatina	81	21	95	113	127	63	28
Diphtheria	6	7	11	11	8	4	5
Whooping Cough	11	28	49	29	65	9	21
Fever	74	63	48	44	20	37	21
Diarrhæa	61	76	56	60	80	54	44
Total of Seven chief Zymotics	434	253	296	280	326	239	122
The other Zymotics, viz.:—							
Cholera .....	...	3	61	...	2	1	...
Croup	15	14	17	19	13	32	23
Dysentery	1	5	2	3	2	2	2
Cynanche & Aphtha	2	5	...	7	4	4	6
Erysipelas & Pyæmia ...	4	8	3	...	5	3	5
Metria	3	...	4	...	...	1	1
Syphilis	3	6	8	3	4	2	4
Puerpura .....	...	...	...	1	2	1	1
Intemperance	1	4	2	2	...	1	...
Totals	463	298	393	315	358	286	164

To obtain, however, a true comparative view of the checked or unchecked ravages of the most important—*i.e.* the Zymotic enemy—

it is necessary, in consequence of the difference of population in the different years, to correct the number of deaths for each year to correspond with the population of 1870.

**Table of the Seven Chief and other Zymotic Diseases, &c.,
for Seven years, corrected to the population of 1870.**

	1864.	1865.	1866	1867.	1868	1869.	Average of six pre- ceding Years.	1870.
Small Pox	107.7	31.5	0.9				23.3	2
Measles	68.3	17.9	30.	19.6	23.0	69.	37.9	1
Scarlatina.....	71.	17.9	79.2	96.3	112.2	60.4	72.8	28
Diphtheria	5.3	6.	9.2	9.4	7.1	3.9	6.8	5
Whooping Cough	10.	23.8	40.9	24.7	57.4	8.7	27.5	21
Fever.....	64.8	53.5	40.	37.5	17.7	35.5	41.5	21
Diarrhæa	53.5	64.6	46.7	51.2	70.6	51.7	56.3	44
Seven Chief Zy- motic Diseases	380.0	214.8	246.9	238.6	287.8	229.2	266.1	122
Cholera.....	..	2.6	50.9		1.8	0.9	9.3	
Croup	13.2	11.9	14.2	16.2	11.5	30.7	16.2	23
Other Zymotics..	12.3	23.8	15.9	13.7	15.	13.4	17.3	19
Total Ditto ..	406.0	253.1	327.8	268.6	315.9	274.2	308.9	164
Total Non-Zy- motics	692.5	708.4	786.7	669.6	631.8	615.3	683.0	691
All Causes	1098.5	961.5	1114.5	938.2	947.7	889.5	991.9	855

THE LOCAL MORTALITY AT ITS LOWEST RECORD, IN 1870.

The first thing so agreeably apparent in the above table is the remarkably small number of deaths, from all causes, in 1870, as compared with the average of the six preceding years, or with the (proportionate) numbers of any one of them. Thus, the 855 from all causes in 1870 is 136 less than the average of the 6 years, and 34 less than the year of least mortality in the averaged series. If, however, we deduct the 691 non-zymotic deaths, which are 8 *above* the average, then, the diminished mortality is seen to belong entirely to the zymotic deaths of the year, *i.e.*, we have only 164 zymotic deaths of 1870, as contrasted with 308, the average number of the previous 6 years, and 253 in 1865, which had the fewest of such deaths in any one of such averaged years.

This happy diminution, amounting to nearly one-half in the average of the zymotic or preventable group, extends to every single disease included in it, and the result, so far, indicates common influencing causes. Such a great diminution is as unusual as it is satisfactory, and, whether owing to successful efforts, to the cessation of overcrowding, or to the enforced or temporary impotence in this town of a leading zymotic, or, as is probable, that the potential action includes all these causes, it is a most welcome and noticeable fact, and one to be carefully studied with a view to continued and further efforts.

LAW OF IRREGULAR CYCLE IN ZYMOTIC DISEASE.

Zymotic diseases generally may be rendered more or less impotent by isolating or modifying their infection, by improving the habits and conditions of the people, or by the perfect sanitary state of the district, to which may be added, as to any one special zymotic disease, the decay of its potency from exhaustion in the community of the necessary material to feed or act upon. Practically, some one of these zymotics is always found prevailing with undue activity, having its period of increase, culmination, and decline, while the others are comparatively quiescent, only, however, according to circumstances, to take their own lethal turn in an irregular cycle, thus, small-pox having commenced with 34 deaths in 1863, is seen, by the table, to have culminated in the proportionate number of 107 in 1864, and to have declined to 31 in 1865; Cholera dominated in 1866, but, in its 4th quarter, Scarlatina gets above its average, increases to 96 in 1867, culminates to 112 in 1868, and declines to 60 in 1869; Small Pox then appears in 1870, after a second absence of four years, and, taking previous experience as index, it had valid pretensions to become the leading disease. Will it do so? and, if not, what is the probable reason of its impotence?

THE LOCAL SMALL POX EPIDEMIC. (1)

This worst of all epidemics—Small Pox, was introduced by a

(Note 1.) Full particulars of the early invasion, with remarks and suggestions, by the Medical Officer, were published in the *Lancet*, of December 3rd, 1870.

family on tramp, who brought one of their children home in a convalescent state from Blackburn to Egerton-street, in this town, about the 15th May. Three others of the family were then successively attacked, and the pest quickly infected the vicinity. Its presence only became known to the sanitary authority on June 25th, but by July 15th no fewer than 30 cases, including one death, were discovered and registered. The disease subsequently made its appearance in every part of the town, in all the neighbouring parts of Cheshire, and afterwards, from other sources, reached Liverpool, where it committed very great ravages.

PREVENTIVE MEASURES.

As soon as the presence of the disease was discovered, increased cleansing was instituted, removal of the sick to hospital urged, disinfection of clothes, houses, and localities enforced, as well as all other available means taken to check its progress. An immediate house-to-house inspection having demonstrated that only one-third of the children under four years of age, in Egerton-street and its courts, had been vaccinated, more than fifty or nearly all the unprotected ones were immediately operated on by the Public Vaccinator, together with the unprotected children of two or three other streets of those most likely to receive the infection. The whole of the medical men of the town were also communicated with, among whom the Parish Surgeons especially exerted themselves most effectively in seeking out unprotected children for instant vaccination. Finally, the Parish Authorities stepped in with measures to the same end, so that the immortal teachings of Jenner's great discovery became pretty freely carried out; but it is sad to reflect that while science has, for so long a time, demonstrated the means by which Small Pox may be changed from the worst to the mildest Zymotic Epidemic, and that complete isolation of the patients will stop the disease, that only an imperfect, because not universally enforced, system of Vaccination is secured by the legislature on the one hand, and that no powers to enforce complete isolation of the infectious sick are conferred by it on the other. When the infinitely smaller interests of cattle were endangered by rinderpest, legislative action was wonderfully prompt and vigorous. In the present instance the

extent to which Vaccination has been carried out, together with some favouring circumstances, more than promises, it may be even asserted, will ensure that the present epidemic will be far less fatal than on former occasions ; but, had the power of isolating all infected persons been conferred by the law and properly carried out, then the pest might have been soon stamped out and its dire results nearly altogether prevented.

Table of Deaths from two former Small-Pox Epidemics.

First Cases.	Years.	Deaths.	First Cases.	Years.	Deaths.
45th week	1856	1	24th & 31st week	1863	34
6th week.	1857	44	.....	1864	123
	1858	29	.....	1865	37
	1859	1	.....	1866	1
	1860	0	.....	1867	0
	1861	0	.....	1868	0
	1862	0	.....	1869	0
			26th & 46th week	1870	2

The above table shews the very serious results, even in the present day, of a Small Pox Epidemic, occurring, as it would seem to do, about once in six or seven years ; the first one of 1857-58 annihilated 75 lives and burdened the community with 12 to 20 times that number of, more or less, alarming cases of illness. Taking the smaller proportion, however, as representing those with an element of danger, or temporary business inability, we arrive at the number of 900 serious illnesses coincident with the 75 deaths. Again, the epidemic of 1863, 1864, and 1865, gave far worse results, for the number of deaths was 195, and the seizures of the disease would considerably exceed 2,000. Who can tell the consequent affliction in the family, or rightly estimate the enormous pecuniary loss, such plagues inflict on the community ?

THE REMAINING ZYMOTIC DISEASES.

Continuing the examination of the latter Zymotic table, we further note that the two diseases, Fever and Diarrhœa, which are, perhaps, the steadiest test of sanitary effort, have shewn an almost

continuous decline. The observation to a much more limited, though not unsatisfactory, extent, applies to the Zymotic death totals. It is remarkable that Measles only caused one death during 1870, so that if Birkenhead were an entirely isolated community, the absence of infection, from this disease, would probably ensure its total disappearance. The deaths from Whooping Cough have varied considerably, but both this disease and Croup are additionally influenced by the weather and its action on the ventilation, &c., of the dwellings. The other Zymotic causes of death, though of interest, have yielded too few results to call for further special notice.

CONCLUDING REMARKS.

Viewed as a portion of the great populous port of the Mersey, but separated by the broad river from Liverpool, Birkenhead is seen to form the western suburb, and thus lies in the direct track of the western sea breezes, which here prevail over the easterly class of winds in the proportion of 3 to 2. Geologically the lower portions and major part of the town rest on boulder clay, superposed with varying thickness, ⁽¹⁾ on the denuded and irregular surface of rock, of the new red sandstone formation, the rock itself crops out in several places, and, speaking generally, constitutes the higher parts. An extensive system of sewers conducts the drainage directly into the river, though part of it remains pent up during the time of high water. All the chief streets are of ample width and run in strait lines through and across the town, the area of which, however, is even yet but moderately covered with buildings, so that the Sanitary Bye-Laws of 1862, if fully enforced, will always prevent it from being much over-crowded with habitations. The water supply is exceedingly good and plentiful. The greater part of the dwellings are quite modern. Well conducted public slaughter houses are provided by the local authority, and many evils ordinarily connected with ancient towns have, in this, but little existence.

(Note 1.) The extreme thickness hitherto known of the clay bed is 140 feet in the case of wells being sunk for the brewery and corn mill in Livingstone Street, and 135 feet at the corn mill in Arthur Street; from this extreme depth it varies in other places to a thickness of a few feet.

SOME STRUCTURAL DEFECTS.

Unfortunately, before the adoption of the Sanitary Bye-laws above referred to, many wretched and improperly constructed courts were created, and narrow streets laid out. Whole rows of dwellings, too, were built with little or no sufficient areas for due ventilation; added to this, the foul midden system was the one at first adopted in common with all the northern towns. These evils have to be met by increased cleansing, general disinfection, the conversion of the privy middens into water-closets and dust-bins, and the demolition, when feasible, of improperly constructed dwellings and court habitations, together with the construction of new roads to open out two or three crowded localities.

PRACTICAL DESIDERATA.

Some change in the present mode of connecting cottage drains with the sewers is much required, such as making sink pipes, &c., terminate over gully openings in the yards outside the building, so as to prevent direct access into dwellings for sewer gases through imperfect tubes and traps. The sewers themselves, also, require to be very much more extensively ventilated than at present. The vacant lands in the town, especially those adjoining courts or crowded neighbourhoods, are often fouled by refuse, and in that respect would be greatly benefited by enclosure. The frequency required for thorough scavenging of streets and places cannot be diminished with impunity to sanitary results, and will need a prompt or a steady increase in proportion as the population recovers itself. Finally, a discouragement of the bad system of constructing low chimneys will tend much to the conservation of a good atmosphere about the town, as will also a strict enforcement of the laws with respect to the illegal production of dense black smoke in the case of all trade furnaces.

WORK OF THE SANITARY DEPARTMENT IN 1870.

Disinfection and deodorisation have been steadily practised with respect to gully-hole cleansings, cab-stands, and ashpits during

summer, and to streets and courts, as occasion required. Some 20 pools of stagnant water have been drained off by the Commissioners, and 46 others by notice to the owners. 783 notices to cleanse have been issued, and ultimately complied with, for obstructed drains. House and common Lodging-house inspections have been duly carried on by the Inspector. 183 notices to white-wash were served. 65 cases of defective flagging were referred to the Surveyor. 25 Nuisance Removal Notices were served upon occupiers and owners, and duly enforced. 8 illegally occupied cellars were cleared, and, lastly, 5,063 ash-pits were cleansed by the contractor during the year.

TABLES, &c.

The various details connected with the mortality and meteorology of the year are fully set forth in the annexed tables, of which No. I. gives the causes of death, arranged under various epochs of age, with the relative numbers of the sexes. No. II. gives the weekly mortality, according to their death causes, condensed in classes, the quarterly returns of births, and averages of the meteorological phenomena for the weeks, quarters, and the year, compiled from Mr. Hartnup's daily record. No. III. gives the causes of death for each week of the year in full detail. No. IV. gives the streets in which death from any cause occurred, distinguishing those in which a Zymotic death took place. No. V. gives the (lunar) monthly deaths from all causes, and from Zymotic disease, together with the monthly rate per 1,000 for each. And No. VI. specifies the occupations, &c., of all, who, either themselves, or whose members of family have died within the year.

Thanks are again due to Mr. Hartnup, for his kindness in supplying the Health Committee every week with the valuable results of his meteorological labors.

C. O. BAYLIS, M.D., M.R.C.S., &c.

Birkenhead Commissioners,
Health Department,
May, 1871.

TABLE I.

Fatal Register of Deaths in Birkenhead (and Cloughton),
For the Year ending December 31st, 1870.

CAUSES OF DEATH.	AGE BELOW.											SEX.		TOTALS.																																																																																					
												Males.	Females.																																																																																						
	1	2	3	4	5	6	7	8	9	10	11				12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
FROM ALL CAUSES.	255	72	78	35	17	17	60	79	80	56	52	41	12	1	434	421	855																																																																																		
I.—Zymotic Diseases.....	60	27	34	12	7	5	5	2	0	1	1	2	.....	.....	74	90	164																																																																																
I.—Diphtheria or variable State.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
II.—Scarlatina.....	3	4	13	4	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																							
III.—Typhoid Fever.....	17	13	9	8	5	7	24	30	18	9	3	.....	.....	.....	.....	.....	.....																																																																												
IV.—Diseases of the Brain, Nerves, &c.....	48	7	14	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																					
V.—Diseases of the Heart and Blood Vessels.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																		
VI.—Diseases of the Lungs, &c.....	48	13	14	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																					
VII.—Diseases of the Stomach, Liver, &c.....	9	2	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																					
VIII.—Diseases of the Kidneys, &c.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
IX.—Diseases of the Uterus, &c.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
X.—Diseases of the Bones, &c.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XI.—Diseases of the Skin, Cellular Tissues, &c.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XII.—Puerperal Fever.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XIII.—Childbirth, and Puerperal Fevers.....	27	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																			
XIV.—Old Age.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XV.—Atrophy and Debility.....	34	1	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																					
XVI.—Deaths from Violence.....	2	2	3	2	2	11	11	4	4	3	.....	.....	.....	.....	.....	.....	.....																																																																											
XVII.—Causes not Specified.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																		
II.—Dropsy.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
I.—Small Pox.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
II.—Measles.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
III.—Scarlatina.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
IV.—Typhoid Fever.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
V.—Whooping Cough.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
VI.—Typhus—Enteric, &c.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
VII.—Cholera.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
VIII.—Dysentery.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
IX.—Gonorrhoea.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
X.—Gynaeche.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XI.—Erysipelas and Pyemia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XII.—Puerperal Fever.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XIII.—Syphilis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XIV.—Dropsy.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XV.—Gangrene.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XVI.—Rheumatism.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XVII.—Scrofula.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XVIII.—Hydrocephalus.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XIX.—Phthisis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XX.—Tubercle Mesenteric.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXI.—Inflammation of Brain, &c.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXII.—Epilepsy—Convulsions.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXIII.—Tetanus—Trismus.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXIV.—Disease of Brain, &c.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXV.—Disease of Heart.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXVI.—Disease of Blood Vessels.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXVII.—Tracheitis—Laryngitis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXVIII.—Bronchitis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXIX.—Pneumonia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXX.—Disease of Lungs, &c.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXXI.—Stomatitis—Pharyngitis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXXII.—Inflammation of Stomach, Bowels.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXXIII.—Peritonitis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXXIV.—Disease of Liver—Jaundice.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXXV.—Tumor—Abscess—Hernia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXXVI.—Disease of Kidneys.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXXVII.—Disease of Bladder—Prostrate.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXXVIII.—Nephritis—Albuminuria.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XXXIX.—Disease of Bones, Joints.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XL.—Disease of Skin.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XLI.—Disease of Cellular Tissue.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XLII.—Premature Birth.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XLIII.—Teething.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XLIV.—Childbirth.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XLV.—Old Age.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XLVI.—Atrophy and Debility.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XLVII.—Accidents—Killed.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XLVIII.—Burns—Scalds.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
XLIX.—Drowning, Asphyxia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
L.—Wounds, Blows, Crushes, Falls, &c.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
LXI.—Causes not Specified.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....																																																																	
MALES.....	130	35	48	16	11	9	32	41	35	32	30	18	51	4	94	.....	.....																																																																																
FEMALES.....	125	37	40	19	6	8	28	38	44	24	22	23	7	0	431																																																																																		
TOTALS.....	255	72	78	35	17	17	60	79	80	56	52	41	12	1	434	421	855																																																																																		

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TABLE IV.

STREET REGISTER OF DEATHS.

Streets.	Total from all causes.	From Zymotic Causes only.	Streets.	Total from all causes.	From Zymotic Causes only.
At Sea.....	1	0	Bidston Road	1	0
Abbot Street	6	2	Back Myrtle Street	2	0
Albion Street	3	1	Borough Road ...	2	0
Albion Terrace ..	3	0	Birkenhead	69	0
Albert Terrace...	1	0	Berner Street	1	0
Castle Buildings	1	0	Back George Street	3	0
Market Bdgs. ...	1	0	Byrom Street	2	1
Hamilton Terrace	4	0	Cambridge Place...	1	0
Arthur Street	3	1	Camden Street ...	4	0
Alma Street	1	0	Canning Street ...	3	0
Abbey Street	3	0	Cardigan Street ...	1	1
Alfred Road.....	1	0	Cathcart Street ...	6	1
Austin Street	1	0	Chapel Street	1	0
Ashville Road.....	1	1	Chester Street.....	14	2
Adelphi Street ...	1	0	Chester Place ...	2	0
Back Arthur Street	1	0	Tory Place	1	0
Bridewell.....	1	0	Church Street.....	4	1
Barton Street	6	1	Clarendon Street...	5	1
Back Oliver Street	1	0	Cloughton Road ...	8	0
Back Beckwith St.	8	1	Clifton Crescent ...	1	0
Back Price Street	2	0	Corporation Road	1	0
Back St. Anne St.	2	0	Christchurch Road	1	1
Beckwith Street ...	13	3	Conway Street.....	10	3
Byrom Place ...	4	1	Kent Place	4	1
Bentinck Street ...	5	2	Cloughton Village	2	0
Brassey Street.....	3	2	Crown Street	4	1
Bridge Street	9	0	Cross Street	1	1
Brook Street	34	8	Cleveland Street...	7	3
Borough Hospital	11	3	Cleveland Avenue	1	0
Bertha Street	2	0	Brook Square ...	1	1
Bridge End Terrace	1	0	Blackpool Street...	2	0
Ball's Road.....	2	2	Ruabon Street...	2	1
Prince's Terrace	1	0	Wrexham Street	3	2
Bright Street	1	0	Denbigh Street	1	1
Brougham Street...	3	1	Camperdown Street	1	0

Table IV.—Continued.

Streets.	Total from all causes.	From Zymotic Causes only.	Streets.	Total from all causes.	From Zymotic Causes only.
Clayton Street.....	3	1	Grange Lane	13	1
Catherine Street...	1	0	Sussex Terrace	1	0
Claughton Range	1	0	Greenfield Street ..	2	1
Club Row	3	0	Great Float.....	2	1
Cavendish Road ...	1	0	Grosvenor Road ...	1	0
Dacre Street	1	0	Grange Mount ...	1	0
Davies Street	2	1	Gillbrook ...	1	0
Dock Cottages ...	13	3	Hamilton View ...	1	1
Derby Street	4	1	Hamilton Square...	3	0
Devonshire Place	1	0	Hamilton Street ...	4	2
Devonshire Road	3	0	Havelock Street ...	3	1
Duncan Street.....	2	1	Hope Street	5	1
Duke Street	3	0	Henry Street	6	1
Douglas Street ...	1	1	Horatio Street.....	2	0
Denbigh Street ...	2	0	Hampton Street ...	3	0
Dale Street.....	1	0	Ivy Street	9	1
Egerton Street ...	7	2	Ivy Terrace.....	1	0
Carpenters' Row	3	0	Jackson Street ...	2	1
Connor's Court	1	0	Kendal Street	1	0
Evans' Place	1	0	Leicester Street ...	3	0
Eldon Place	12	2	Laxey Terrace.....	1	1
Elgin Street	2	0	Lowther Street ...	5	1
Elizabeth Street...	4	0	Laird Street	2	0
Elizabeth Place ...	3	0	Lingdale Road.....	2	0
Exmouth Street ...	7	0	Market Place South	1	1
Eagle Court	1	1	Mortimer Terrace..	1	0
Edgar Street	3	1	Morpeth Buildings.	6	0
Euston Grove.....	1	0	Marion Street	3	0
Eton Place	1	0	Market Street	18	2
Fore Street.....	2	0	Meacock Street ...	2	0
Freeman Street...	1	1	Midland Street ...	4	2
Flamank Street ...	9	1	Moon Street	2	0
Forest Road	1	0	Myrtle Street	3	0
Frederick Street...	3	0	Mornington Street	3	3
Field Street	12	3	Marshall Street ...	1	1
Ferry Steam Boat	1	0	Monk Street	1	0
Grosvenor Place...	1	0	Myrtle Place	1	0
Grange Road	2	0	Mersey Street	2	1
Grange Street.....	1	0	Manor Gardens ...	1	1
George Street.....	2	0	Milton Road ...	1	0
Gladstone Street...	6	0	Neptune Street ...	4	1

Table IV.—Continued.

Streets.	Total from all causes.	From Zymotic Causes only.	Streets.	Total from all causes.	From Zymotic Causes only.
Nelson Street	2	0	St. Mary's Gate ...	4	3
Napier Street	2	2	Hughes' Buildings.	1	0
Oakfield View.....	2	0	Shrewsbury Road..	1	0
Oak Street	9	5	St. Mary's Avenue.	2	0
Old Bidston Road..	3	1	Sun Street	6	1
Old Chester Road..	2	0	Sydney Street.....	1	0
Godfrey's Terrace	1	0	St. John's Street...		
Mathew's Place..	1	1	St. John's Place	1	0
Oliver Place.....	4	0	St. Mary's Terrace	3	1
Oliver Street.....	11	2	Sussex Street	1	0
Miller's Place ...	1	0	Slatey Road	2	0
Oxton Road.....	11	4	St. Mary's Street...	1	1
Orderly Residence.	1	0	Stanley Road	2	0
Orderly Home	1	0	Thomas Street ...	10	2
Priory Street	1	1	Tranmere Vale ...	6	0
Priory Court ...	2	1	„ Vale Terrace...	1	0
Pool Terrace	2	0	Taylor's Buildings.	5	3
Park Road South..	5	1	Thornwood	1	0
Park Street.....	1	0	Talbot House	1	1
Price Street.....	25	9	Upper Beckwith St.	7	1
German Terrace	1	0	Upton Road	1	0
Pool Street	1	0	Vine Street.....	8	2
Palm Hill	1	0	Vulcan Street	1	0
Prince's Terrace ...	1	0	Vicker Street	1	0
Pleasant Street ...	5	0	Wilbraham Terrace	2	0
Pilgrim Street.....	1	0	Watson Street.....	12	4
Parkfield			Waterloo Place ...	2	0
Parkfield Place..	2	1	Rushton's Court.	1	0
Plymouth Place.	1	1	Walton Street.....	3	2
Peel Street	5	2	Wesley Street	1	0
Park Road East ...	3	1	Westbourne Road..	4	2
Private Passage ...	1	0	White Street	9	2
Ross Terrace	1	0	William Street ...	5	1
Rock Terrace.....	1	0	Wilson Street	5	2
Russell Street.....	2	0	Windsor Street ...	5	1
Robert Street	3	1	Wood Street	10	0
Rimmer's Cottages	1	0	Warwick Street ...	4	0
Stanley Court ...	1	0	Wilkinson Street...	13	3
Sandford Street ...	2	0	Whitefield Place ...	1	0
Somerville Street..	1	0	Williams' Cottages.	2	2
St. Anne Street ...	17	3	Windsor Place ...	2	0

TABLE V.

(Lunar) Monthly Table of Total and Zymotic Deaths with their Rates per 1,000 per annum.

1870.	Total No. of Deaths.	Rate per 1,000	No. of Zymotic Deaths.	Rate per 1,000.
1st Month ending January 28th...	69	19.9	13	3.7
2nd ,, February 25th	77	22.2	19	5.4
3rd ,, March 25th ...	58	16.7	10	2.8
4th ,, April 22nd.....	55	15.8	9	2.6
5th ,, May 20th	43	12.4	4	1.1
6th ,, June 17th	52	15.0	10	2.8
7th ,, July 15th	52	15.0	13	3.7
8th ,, August 12th ...	69	19.9	15	4.3
9th ,, September 9th	77	22.2	19	5.4
10th ,, October 7th ...	51	14.7	12	3.4
11th ,, November 14th	69	19.9	14	4.0
12th ,, December 2nd	69	19.9	13	3.7
13th ,, ,, 31st	114	32.9	13	3.7

NOTE.—The 13th month contains 29 days.

TABLE VI.

Occupations of Persons who either themselves, or whose
Members of Family, have died during 1870.

Agents	5	Collector	1
Architect	1	Clogger	1
Accountants	5	Charwoman	1
Boatbuilder	1	Clerks	6
Bookbinder	1	Coxswain	1
Bailiff	1	Drapers.....	8
Boilermakers.....	24	Drillers.....	2
Blacksmiths	15	Dock Gateman.....	1
Butchers	8	Domestic Servants	33
Brokers.....	5	Dressmaker	1
Barman.....	1	Dyers	2
Brickmakers	4	Dealers	7
Bricklayers	6	Distiller	1
Brewers.....	3	Engravers	2
Bakers	10	Engine Fitters	11
Builders	5	Engine Smith	1
Brass Founder	1	Engineers	4
Book-keepers	21	Engine Grinder	2
Botanist	1	Engine Drivers.....	12
Boatmen	2	Engine Turner	1
Bridewell Keeper	1	Eating-house Keeper	1
Car Owners	5	Farmers	5
Coach Builders.....	2	Foundryman	1
Carters	7	Fireman	1
Cabinet Makers	3	French Polishers	2
Car Drivers	3	Flatmen	5
Chip Vendor.....	1	Gunsmith	1
Cooper	1	Glassmaker	1
Coachmen	6	Grinder	1
Chemist	1	Gentlemen	5
Customs' Officers	4	Gardeners	6
Cashiers	2	Gasfitter	1
Cement Manufacturer	1	Grocers.....	9
Cardmaker	1	Grooms	2
Cotton Sampler.....	1	Gatekeeper	1
Currier	1	Gas Inspectors	2
Calker	1	Hatters	2

Table VI.—Continued.

Housekeepers	5	Stevedore	1
Hammermen.....	3	Shopwoman	1
Hairdressers	2	Shopman	1
Iron Plainer	1	Stationers	2
Iron Sawyer	1	Storekeepers	7
Joiners	21	Shipsmiths	2
Jeweller	1	Shipriggers	4
L. R. C. P.'s	1	Shipbuilders	2
Labourers	238	Stokers	5
Major	1	Shipkeeper	1
Missionary	1	Shoemakers	19
Manufacturer	1	Sawyers	5
Milliner	1	Surgeons	3
Merchants	8	Ship Carpenter	1
Messenger	1	Seamen	24
Ministers	2	Stonemasons	20
Machinists	4	Shipwrights	21
Master Mariners	7	Striker	1
Mariners	8	Sailmakers	2
Milk Dealer	1	Salesman	1
Optician	1	Silk Mercers.....	2
Provision Dealer	1	Shipowners	3
Pensioners	3	Saddlers	2
Painters	13	Ship Steward	1
Policemen	4	Schoolmaster	1
Publicans	12	Sub-Contractor	1
Porters	9	Smelter	1
Plasterers	5	Tailors	9
Plumbers	4	Timekeeper	1
Pattern Maker	1	Traveller	1
Pilot	1	Teachers	2
Printers.....	3	Unknown	8
Platers	2	Upholsterer	1
Railway Official	1	Wheelwrights	3
Railway Checker	1	Warehousemen	6
Railway Shunter	1	Watermen	6
Riveters	2	Watchmakers	2
Railway Manager	1	Well Sinkers.....	2
Single Woman	1	Watchman	1

