

1858.

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BOROUGH OF CARDIFF.

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THE

# FIFTH ANNUAL REPORT

ON

SANITARY CONDITION OF CARDIFF.

*[for the year 1857]*

BY H. J. PAINE, M.R.C.S. &c.,  
OFFICER OF HEALTH.

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PRINTED BY ORDER OF THE LOCAL BOARD OF HEALTH.

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CARDIFF:

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TO THE CARDIFF LOCAL BOARD OF HEALTH.

*Cardiff, February 25, 1858.*

GENTLEMEN,

In directing your attention to the sanitary condition of Cardiff during the past year, the rate of mortality, as compared with that of 1856, will be found to have increased; this has been occasioned by the prevalence of small-pox in a severe form, an epidemic the town had been exempted from for some years.

To enable you to judge of the rate of mortality in this town, where the yearly number of its inhabitants increase in an extraordinary manner, and where the census of 1857, with the ordinary calculation of increase of other districts, owing to local peculiarities, can afford us but little assistance,—we are obliged, as we have hitherto done, to adopt the birth-rate as a basis on which to fix the number of our population. According to the Registrar-General's reports, the number of births to the gross population of the kingdom is less than three-and-a-half per cent.; but as Cardiff possesses a large industrial population, among whom the birth-rate would be likely to be higher, we may assume four per cent. as sufficiently correct; according to this calculation, the registered number of births being 1367, there have resided during the year 1857, 34,175; but to these must also be added the number of sailors constantly in the port, as they contribute somewhat largely to the death returns; these have been estimated at nearly 4000, making, as the total constituent population of Cardiff for the year, in round numbers, 38,000.

The deaths from disease and other causes during the year, (including 66 in which coroners' investigations were held,) amounted to 883.

In estimating the sanitary standard of a locality, it has been usual to compare the mortality with the number of births, as some value as

a criterion is attached to the result. I have selected three towns where there will be found some analogy in the class constitution of their inhabitants, and constructed a table, so as to enable you to compare them with Cardiff.

1857.

TOWN.	Number of Births.	Number of Deaths.	Proportional number of Deaths to every 100 Births.
Cardiff.....	1376	883	64
Gloucester .....	1097	707	64
Bristol .....	2130	1613	75
Liverpool.....	9373	9115	97

Under the head of per centage, I have omitted the decimal proportions, these being calculated to embarrass, without in any sensible degree affecting the result. According to this view, the sanitary condition of Cardiff does not assume an unfavourable aspect.

We have now to calculate the proportionate rate of mortality with the population. The number of deaths, as I have before stated, being 883, and the population contributing to these deaths being estimated at 38,000, shows a mortality at the rate of 23.23 per thousand, or not quite two and a quarter per cent. In 1856, the mortality was 22.21 per thousand; in 1857, therefore, 23 deaths occurred, where, if the health of the town had continued as good as in 1856, there would have been only 22.

Before I enter into the various local causes operating on the public health, it will be desirable to take into consideration the meteorological influences during the year.

During the Winter quarter, embracing January, February, and March, the temperature was slightly above the average; there was a minimum amount of rain, but a humid condition of atmosphere; these circumstances operated very favourably on the public health, the deaths being below the average. The Spring quarter also had a higher range of temperature, except during a few days in April: inflammatory diseases, especially of the respiratory organs, were less fatal than usual. An excess of temperature also ruled the Summer quarter; some days in August and September, the temperature in the day exceeded 90°, giving rise to biliary and gastro-biliary diseases. Several deaths were registered from diarrhœa, dysentery, and in one instance cholera; but a very large proportion of these obtained among

infants. The case of cholera occurred in an adult female. During the Autumn the temperature of the air continued in excess.

Throughout the whole of the year there was less than the usual average amount of rain.

In a previous report which I had the honour of presenting to you, I drew your attention to the circumstance that the upper or the northern portion of the town, being built on gravel, allowed freely of the percolation of surface-water, and dissolved impurities; the lower portion, being built on alluvial clay, opposed this, thus exercising an unfavourable influence on the public health. Your new system of drainage has removed these excitants of disease.

Mr. Rammell reported the impure state of the water as obtained from the private and public wells: the supply of water is now abundant and good.

The condition of your roadways in the newly-formed streets have until recently been in a most deplorable condition; the mud and stagnant water on their surface has been saturated with decaying vegetable matter and house impurities, occasioning malarious exhalations; testifying their presence by their noxious smells, as disagreeable and sickening to the senses as they were dangerous to the health of the residents: these nuisances existed especially in the Bute Dock district. In the early part of the year, and during the summer months, they seriously affected the locality: you have recently pitched and paved many of these streets, and effectually removed these serious evils; a wholesome aspect now characterises the district. The absence of vegetable refuse matter proves now, as I have urged it would, that the previous filthy condition of the street invited the inhabitants of the houses to deposit their nuisances in these roadways, while their present cleanly condition occasions a return to cleanly habits; and I feel satisfied that a most sensible improvement will take place in the general health of those residing in the immediate neighbourhood.

An evil requiring considerable perseverance to overcome exists in the back-yards of the houses occupied by the labouring classes, especially the Irish, in both the Newtown and Dock districts: it arises from the great demand for house accommodation. Buildings, before they are finished, are sought after; the landlord lets them before the yard is levelled, or even cleansed from the refuse of the building materials; the broken, muddy ground retains the moisture on the surface; the occupants are of that class, many requiring the means

others the desire, to obviate the evil; and, as spoken of when alluding to the roadways, the filthy, unwholesome appearance of the yard nurtures corresponding habits, too readily imbibed by those exposed to their influence; while the landlord believes he has discharged his duty to himself when he lets his property, little regarding the danger of diseases he entails on his tenants by the neglect of duty he exhibits towards them. And it is in these localities, and under these circumstances, all the essentials necessary to render the wretched occupants susceptible of epidemic disease are to be found; it is here you have had cholera, diarrhœa, and typhus; and unless means are adopted to eradicate these hot-beds of malaria, it is here you must have them again and again. To remedy these, you must appeal by every power you possess to the landlord; it is useless to do so to the tenant, who, in the great majority of cases, lacks both the inclination and the means.

Another evil, one that has lately engrossed considerable public attention, is to be found in a most serious form in Cardiff; I mean the crowded condition of the dwellings of the poor. I have frequently brought this matter before your notice, and although much has been done to mitigate the consequences, there is still much remaining to be done. To hope entirely to reduce to a proper number the inhabitants of the houses tenanted by labourers here, is out of the question; to lower them to something like health requirements can be effected, especially if close attention is paid to cleanliness and ventilation by house visitation; but this supervision must be constant, the slightest interruption immediately exhibits a return to all its evils. I never saw this more strongly marked than during the autumn of the last year. Serjeant Hibbs, whose duty it has been to conduct this supervision, for a short time was employed to discharge other duties connected with your board; immediately the houses were over-crowded, a sickening offensive atmosphere, peculiar to rooms constantly occupied and little cleansed, pervaded the dwellings of a majority of the houses in the New Town district, and I found a considerable increase of sickness among the inhabitants of this district; it unfortunately occurred when epidemic small-pox broke out, and required considerable energy to overcome. I have taken some pains to obtain information of the extent of over-crowding in certain streets in this town, and select a few to enable you to judge the result which must at times follow if a proper supervision is not enforced.

STREET.	No. Houses with Lodgers.	No. Inmates.	Average No. in each House.	Greatest No. in One House.
Pendoylan-street ..	25	333	13 $\frac{1}{2}$	20
Thomas-street ....	28	366	13 $\frac{1}{2}$	23
William-street ....	32	522	16 $\frac{1}{2}$	26
Ellen-street .....	30	463	15 $\frac{1}{2}$	24
Tyndal-street .....	13	190	14 $\frac{1}{2}$	20
Herbert-street ....	6	130	21 $\frac{1}{2}$	23
East-street .....	14	181	13	20
Little Frederick-st..	7	104	15	12
Stanley-street.....	29	262	9	13
Whitmore Lane ....	27	286	10 $\frac{1}{2}$	17
Union Buildings ....	18	183	10	13
	222	2920		

These 222 houses comprise but a portion of the common lodging houses of the town ; you can therefore conceive the amount of duty required of Serjeant Hibbs to supervise them effectually. Had the occupants been distributed over these houses in merely the average proportion, the evils of overcrowding might be lessened by the observation of cleanliness and ventilation ; but in the last column you will observe that some houses when recently inspected, as in William-street, contained 26 inmates. The largest houses in these streets contain less than 5500 cubic feet of air by admeasurement, so that these 26 are supplied with only 210 cubic feet of air for each inmate. The supply considered necessary for an individual by the authorities in prisons, is about 1000 cubic feet, with all the sanitary regulations such establishments admit of ; the sleeping apartments are never occupied by day ; but in these overcrowded lodging houses, with the limited supply of 210 cubic feet of air, the sleeping rooms too frequently are occupied night and day, ventilation and cleanliness is imperfect, noxious exhalations peculiar to sleeping apartments load the air which is breathed over and over again, the very element of life becomes poisoned, the wretched inmates are constitutionally pre-disposed to sporadic diseases, and when epidemics visit the locality it requires little difficulty to conceive the fatal consequences. But it is not merely as a health protection that your powers should be exercised to combat the evils of overcrowding ; immorality, and frequently crime, are the necessary sequences of the indecent manner in which these rooms are occupied ; few of these houses but you will find in them two and three married couples occupying the same sleeping apartments, and in many a commingling of married and single adults. A political economist who studied human nature well, has observed : " The propensities of the original savage still exist, and will develop themselves if circumstances

tend to nourish them." Can a condition more likely to brutalize the human mind be conceived, than the state of things I have just described? or can anything make them more careless of the proper observation of social and moral duties? .

Serjeant Hibbs, except upon the occasion that I thought it necessary to call your attention when he was employed on other duties, has supervised these dwellings well. I have visited them over and over again, and in few instances find he does not compel cleanliness, lime-washing, and as far as practicable ventilation; he has reported to me day after day his house inspection and the result of his observations; the accuracy of these I constantly test, and I invariably find them correct. He reported to me during last year 14,373 day visitations; in these he specifies the general aspect of the house, with any notice of an existing nuisance he may observe; he enumerates the directions he has given for an improvement, and at his next visit reports if these have been followed. He made during the same period 10,486 night visitations; these are between the hours of 10 and 12; in these he has to ascertain the number of occupants, and when these exceed the allowance he enforces a diminution; in some few instances his instructions have been disregarded; he then summons them before the magistrates. The owners of these houses now comprehend the necessity of obedience to these instructions, and an appeal to the authorities is now rarely necessary. He reported to me 78 houses in a filthy condition, and 117 nuisances. I find little difficulty in enforcing lime-washing; and on my recent visitations, out of nearly 300 houses, found few but were in a creditable state of cleanliness.

Having thus enumerated the principal circumstances likely to affect the public health in Cardiff, I will now bring before your notice the standard of health the town has attained, as indicated by the extent of mortality, and compare it with the mortality of other districts.

	In 1857, Rate of Mortality per 1000.
In 125 districts and 23 sub-districts, comprising } the chief towns of England and Wales . . . . . }	25.29.
In the remaining districts and sub-districts, com- } prising chiefly small towns and country parishes }	18.75.
In Cardiff . . . . .	23.23.

The rate of mortality in Cardiff during 1857, was less than the average mortality of the first class, comprising the chief towns where local causes operate unfavourably on the public health; but it was greatly in excess of the second class, embracing small towns and rural parishes, where there would be an absence of ordinary excitants of

disease. It must also be borne in mind that the mortuary rate of a large town with even the present imperfect sanitary regulations should not exceed 22 per thousand, Cardiff being, as I before stated, 23. The 817 deaths (excluding 66 inquests) took place at the following ages :—

AGE.		Males.	Females.	Total.
Under 1 year	....	128	134	262
1 and under 2	....	43	30	73
2 "	3	22	30	52
3 "	4	21	17	38
4 "	5	15	13	28
5 "	10	22	15	37
10 "	15	5	3	8
15 "	25	39	23	62
25 "	35	38	30	68
40 "	45	31	34	65
45 "	55	25	9	34
55 "	65	14	17	31
65 "	70	16	19	35
75 "	80	5	11	16
85 "	95	5	3	8
95 and upwards	....	0	0	0
		429	388	817

The most striking feature in the above table is the large proportion of infant mortality, or that below five years of age, 453 having died at that period of life during the year, or 55·4 per cent. of total deaths. The ordinary proportion should be about one-third. In large manufacturing towns it has been found that a system of administering soothing remedies has been adopted by parents for the purpose of allaying restlessness, and allowing the mother to attend to other duties than nursing. I do not believe this system exists in any degree in Cardiff; and had the excessive infant mortality been confined to the past year, I should have been disposed to attribute this to the prevalence of small-pox, 111 deaths having resulted among infants from that disease; we are, therefore, obliged to seek an explanation from other causes; and I can but attribute this mortality to the evil of over-crowding which I have just alluded to. The offspring at birth in many instances is feeble, born of parents exposed in early life, when the constitution is being formed, to the same deteriorating influences; at its first entrance into the world, it is weak and sickly; day after day the air it breathes, instead of invigorating saps its constitution, and the sporadic diseases, of debility from birth, mesenteric disease and convulsions, can but produce, as they have done, year after year, a large mortality. 111 deaths have been registered in Cardiff in 1856, as from convulsions alone, and 66 from atrophy or debility, as will be seen from the subjoined table.



Comparative Table of Deaths from all causes for Five Years.

		1853.	1854.	1855.	1856.	1857.	
SPORADIC DISEASES OF KNOWN SEAT.	Diseases of Brain and Nervous System.	Convulsions .....	67	81	82	93	111
		Inflam. & Disease of Brain .....	8	13	13	17	21
		Apoplexy .....	2	1	3	2	9
		Paralysis .....	4	6	6	3	8
		Epilepsy .....	3	3	5	6	11
		Delirium Tremens .....	0	2	5	0	3
		Insanity .....	0	0	1	1	0
		Hydrocephalus .....	11	8	10	8	16
		Disease of Spine .....	0	0	1	3	3
				- 95	-114	-126	-133
Diseases of Respiratory Organs.	Phthisis .....	111	78	78	91	106	
	Bronchitis .....	24	14	51	30	30	
	Inflammation of Lungs .....	32	38	39	61	53	
	Pleurisy .....	1	0	0	1	0	
	Croup .....	6	8	13	15	10	
	Asthma .....	2	3	6	1	4	
	Hydrothorax .....	0	1	0	0	3	
	Empyema .....	0	0	1	0	0	
	Laryngitis .....	0	0	2	0	0	
	Trachitis .....	0	0	0	3	0	
			-176	-142	-190	-202	-206
	Diseases of Abdominal Cavity.	Disease of Circulation } Disease of Heart ..		2	6	11	13
Disease of Stomach .....			3	0	0	6	0
" Liver .....		8	9	6	8	3	
" Bowels .....		4	19	9	15	15	
" Kidney .....		1	3	2	4	4	
" Bladder .....		0	0	1	0	3	
" Womb .....		3	1	0	1	1	
" Œsophagus .....		1	0	2	0	0	
		- 20	- 32	- 20	- 34	- 26	
Zymotic or Epidemic Diseases.	Fever Con. and Typhoid ..	38	18	10	15	20	
	" Puerperal .....	6	5	6	2	6	
	" Scarlet .....	1	36	19	30	5	
	" Rheumatic .....	0	0	3	2	1	
	" Intermittent .....	0	0	2	2	1	
	Measles .....	1	96	2	43	6	
	Small Pox .....	42	1	0	0	161	
	Whooping Cough .....	20	1	12	15	8	
	Diarrhoea and Dysentery ..	22	26	17	25	21	
	Cholera .....	5	175	1	4	1	
	Erysipelas .....	4	0	0	2	3	
	Diphtheria .....	0	0	0	0	1	
	<i>Scarlatina</i> .....	-139	-358	- 71	-140	-234	
	Phlegmon or Abscess .....	0	1	6	2	7	
Scrofula .....	1	6	9	4	0		
Gangrene .....	2	1	6	1	3		
Cancer .....	3	5	6	7	8		
Syphilis .....	4	3	0	1	0		
Hæmorrhage .....	1	3	0	0	1		
Dropsy .....	9	14	9	14	8		
Atrophy, Deb. & Mesentery ..	53	75	48	76	63		
Hydrophobia .....	1	0	0	0	0		
Hernia .....	0	1	0	1	4		
Scorbutus .....	0	0	1	0	0		
Teething .....	10	26	9	9	4		
Exhaustion .....	0	0	0	3	0		
Gout .....	0	0	0	1	1		
Other Diseases .....	11	20	2	7	13		
		- 95	-155	- 96	-126	-112	
Age .....	34	34	44	24	19		
Unknown .....	23	22	25	23	25		
Accidents .....	0	2	0	2	4		
Inquests .....	60	60	58	75	66		
Total .....	644	925	641	772	883		

Arthur 1<sup>st</sup> 1852, 1853, 1854, 1855, 1856, 1857

Reg. Arthur 1<sup>st</sup> day Dec 2

1858 11 22 - Commence 1858

Of the 66 inquests, 56 were males, and 10 females; the following is a classification of the verdicts returned:—

	MALE.	FEMALE.
Excessive Drinking .....	1	1
Accidental Fall .....	13	0
Drowned Accidentally .....	12	2
"    Found .....	12	0
Accidentally run over .....	5	0
"    Suffocated .....	1	0
Visitation of God .....	4	1
Natural Causes .....	1	4
Mortification after Accident .....	1	0
Crushed by Train .....	1	0
Accidentally Shot .....	1	0
Found Dead .....	2	0
Suicide, Hanging .....	2	0
Manslaughter .....	0	1
Wilful Murder .....	0	1
	—56	—10

The following is the proportionate rate of deaths from zymotic or epidemic diseases to total deaths for four years, as governing in England and in Cardiff:—

DISEASES.	Proportion per cent. Zymotic diseases to total deaths.					
	1852.	1853.	1854.	1855.	1856.	1857.
Zymotic dis. in England	23·07	20·66	26·27	..	..	..
"    "    Cardiff	31·93	21·58	38·70	11·07	18·13	26·50

Table illustrating mortality for a period of eight years, as compared with deaths from other causes:—

YEAR.	Inquests.	Deaths from sporadic and other causes.	Deaths from zymotic causes.	Total deaths.	Per centage of deaths from zymotic to total deaths.
1850	33	345	117	495	23·63
1851	45	378	102	525	19·42
1852	30	407	205	642	31·93
1853	60	445	139	644	21·58
1854	60	507	358	925	38·70
1855	58	512	71	641	11·07
1856	75	557	140	772	18·13
1857	66	583	234	853	26·50

On analyzing this table we find under the third head little calling for observation; they are deaths influenced by causes over which you have little control, except that by protecting the individual from the excitants of zymotic disease, you promote his general health, and render him less liable to those deviations of constitution which are the elements of sporadic disease. During the years quoted, this class obtains but the gradual increase concurrent with the increase of population. Convulsions add largely to the mortuary table. In over-

crowded dwellings, as I have before stated, the atmosphere becomes polluted, disturbing not merely the general health, but depressing the nervous system, rendering it weak and irritable, and predisposing it to convulsion. Phthisis, a disease of debility and malassimilation, can but be more fatal under the same pernicious influences.

We now come to that class described as zymotic, or the epidemic, a class requiring your special consideration, inasmuch as a neglect of sanitary precautions and proper regulations is the sole reason of the large difference in the proportionate rate of mortality in towns and rural districts. The effect in Cardiff can only be recognized when you estimate the difference between a mortality of 17,—the natural rate of a rural district free from excitant causes of disease,—and 22, the ordinary rate of a town where the inhabitants are exposed to these influences which are described as removeable, are peculiar to towns, and which by a perfect system of sanitary regulation might be entirely prevented; thus producing 22 deaths when only 17 should die. In Cardiff last year, this had risen to 23, and calculating that its population is 38,000, you have to multiply 38 by 6, and the result shews you that the excess of mortality has been 228 beyond that which should be, and which the duty devolves on you to remedy. Serious as must the consideration of this destruction of life be, there are also other consequences involved in it. You may fairly estimate that to every death from a zymotic cause, there occurs five cases of sickness: these deaths and these cases of sickness are found too frequently among the working classes; and when the calamity affects the head of a family, his labour is interrupted, the means by which he supports those dependent on him are taken from him, and he is too often obliged to seek from a Poor-law Board that subsistence which his failing health is unable to procure.

In this class I have first to call your attention to the deaths from fever; and I am glad to be enabled to assure you that the deaths from this cause, since the sanitary supervision has been adopted in this town, have considerably decreased. I rarely find pure fever now, even in a mild form, in those districts where formerly it was rarely absent. During 1857, there were registered only twenty deaths from this cause.

To enable you to judge of the effect which local existing causes may have on the prevalence of zymotic diseases, I select the three principal diseases of this class which have produced the greatest mortality, and instance the several streets in which deaths have occurred, with the number in each street of total deaths.

NORTH DISTRICT.				SOUTH DISTRICT.					
	Total deaths in each street.	Number of deaths from fever included in total deaths.	Number of deaths from diarrhoea and dysentery included in total deaths.	Number of cases of small-pox included in total deaths.		Total deaths in each street.	Number of deaths from fever included in total deaths.	Number of deaths from diarrhoea and dysentery included in total deaths.	Number of cases of small-pox included in total deaths.
Angel-street	1				Bute-street	15	1	1	3
North-street	2	1			John-street	5			
High-street	4			2	Crichton-street	5			1
Smith-street	2				North Church-street	1			
Crockherbtown	6				South Church-street	3			
Charles-street	4				West Church-street	1			
Paradise-place	3				Peel-street	4	1		2
Spittal	5				Maria-street	8			2
Spring-gardens	3				Sophia-street	8			2
Plucca-lane	10				Christina-street	21			9
Edward-street	5		2		Fredericka-street	6			
Vachell's-court	1				Nelson-street	7			4
Pritchard's-court	1				Francis-street	5			
Mason's Arms-court	2				Loudon-square	3	1		2
Tunnell-street	5			2	Dry Docks	3	1		
Church-street	1				Patrick-street	3			
Womanby-street	1				Henry-street	2			
Blackweir	5				Alice-street	6			
Queen-street	1			1	Stuart-street	9			
St. John-street	1				West Bute-street	6	1		
Trinity-street	2				George-street	15	1		8
Allen's Bank	1				James-street	5		1	
Pontganna	2			1	Louisa-street	21	1		7
Little Farm	2				William-street	7	1		4
Five Bells-court	3		1	1	Adelaide-street	7			1
Wellington-terrace	1				Evelyn-street	10	1		2
Windsor-place	2				Margaret-street	4			1
Rowland's-court	1				Eleanor-street	2			
Nelson-terrace	2	1			Old Scalock	5			
Lloyd's-court	2				Herbert-street	12		1	1
Cathays	4			4	Dudley-place	6			2
Plaisturton	1				Canal-parade	5	1		
Winstone's-court	1				Rothsey-terrace	1			
Station-terrace	2				Bute-terrace	6			2
Jones's-court	1				Dock	4	1	1	
Grange-cottages	1				Bute-road	2			2
Plymouth-street	1		1		Dudley-street	1			
Crown-court	2			2	Trewinilla-street	1		1	
	94	2	4	13	On board ship	4	1		1
						239	12	5	56
NEWTOWN.					PUBLIC INSTITUTIONS.				
Adam-street	10				Union	70			12
Pellet-street	6				Infirmery	6			
Duffryn-street	3				Unknown	1			
Garth-street	6			3					
Taff-street	7			1					
Morgan-street	4								
Godfrey-street	14	3	1	2					
Ivor-street	7			1					
Victoria-street	7			2					
Davies-street	2								
Pendoylan-street	16		1	1					
William-street	17		1	8					
Thomas-street	7		1	1					
Ellen-street	20		1	1					
Roseman-street	3			1					
Tyndall-street	12		1	5					
South-terrace	1								
Noah-street	1	1							
Ellen-street-court	1								
	144	4	6	26					

EAST DISTRICT.					WEST DISTRICT.				
	Total deaths in each street.	Number of deaths from fever, included in total deaths.	Number of deaths from diarrhoea and dysentery included in total deaths.	Number of cases of small-pox, included in total deaths.		Total deaths in each street.	Number of deaths from fever included in total deaths.	Number of deaths from diarrhoea and dysentery included in total deaths.	Number of cases of small-pox included in total deaths.
Ebenezer-street	1				St. Mary-street	12			6
Union-street	14	1	3		Landore-court	7			6
Frederick-street	9	1	1	1	Charlotte-street	15			6
Hill's-terrace	9				Caroline-street	8			2
Bridge-street	10			1	Mill-lane	3			
Love-lane	10			1	Hayes	7			
East-terrace	2			1	Evans' Court	2			
Little Frederick-street	7		1	1	Working-street	4	1		
David-street	10		1	2	Wharton-street	8			3
Stanley-street	16			3	Whitmore-lane	13			4
Mary Ann-street	15			5	Rowe's-square	5			1
Rodney-street	2			1	Quay-street	2			
Rnperra-street	6				Court Coleman-row	3			
Tredegar-street	7			3	Union Buildings	2			1
Homfray-street	1				Baker's-row	4			
Jenkins'-court	3				Black Lion-court	1			
Canal Bank	5			2	Perth-place	2			1
Millicent-street	15		1	2	Little Mill	2			
Canal-street	1				Carpenters' Arms-ct.	2			
Robert's-court	1				Green Garden-lane	1			
Hill-street	3			1	Golden Lion-court	1			
Giles'-court, David-st.	3				Womanby-street	1			
Thomas-street	1				Rising Sun-court	1			1
Little Union-street	1	1			Greyhound-court	1			
	152	3	7	24	Dalton's-court	1			
					Wharf-road	1			
					Sloke-court	2			
						111	1		25

In the above table one feature presents itself in the south or Bute Dock district,—namely, the large proportion of deaths from zymotic diseases to other causes in that district. The serious condition of the roadways in many of the streets evidently exercised, as I have elsewhere stated, a very unfavourable influence on the public health, as is instanced in Christina-street, Louisa-street, and Herbert-street.

Of the 22 deaths from Diarrhoea and Dysentery, 12 occurred under one year of age, 5 at one year, 1 at two years, 2 at three years, 2 at four years, and 2 above thirty years; so that except in two instances the whole of them might be considered as infantile Diarrhoea, or produced by teething; of the two above thirty years of age, one was a case of sporadic or English cholera, occurring at the Dock in June. The other, a death registered as from Diarrhoea; this also occurring at the Dock, in Henrietta-street.

There were also 22 deaths registered from Fever; they occurred at the following ages:—

Under 1 year .....	1
Above 4, under 5 years .....	1
" 5 " 10 " .....	1
" 10 " 15 " .....	2
" 15 " 25 " .....	11
" 25 " 35 " .....	4
" 35 " 45 " .....	1
" 65 " 75 " .....	1
Total ... .....	22

The cases of fever might be traced to sporadic derangement in the individual, or to some endemic cause, rather than to epidemic influences. At the time in which the three deaths occurred in Godfrey-street, the roadway was in a deplorable condition; Noah-street also was bad; the back yards of houses and the roadways in the South district operated unfavourably on the general health, and as there were 12 deaths registered from fever in that district, might have rendered the inhabitants obnoxious to fever. The roadway running parallel and between Nelson-terrace and Little Frederick-street, was in an offensive state from stagnant water and decayed vegetable matter, and gave rise probably to some little amount of fever in that locality. At that time I was visiting two cases of fever there, both of which terminated favourably; and I considered it necessary to call the attention of the Inspector of Nuisances to its condition; on referring afterwards to register of deaths, I observed a death had been registered there.

No case of death from fever was registered during three years in the streets on the South side of the South Wales Railway, and as these streets are occupied by a number of labouring Irish exceeding 2000, who reside in overcrowded houses, it speaks satisfactorily of the result of the supervision exercised over them. I believe no death from fever has been registered there for three years.

Stanley Street, formerly the constant habitat of fever, remained also free from it.

I have now to direct your attention to the epidemic which prevailed to a most serious extent in Cardiff, throughout nearly the whole of the year; I allude to small-pox. There were registered 161 deaths as occasioned by it, and as the duties of my office require I should ascertain any special circumstances connected with its prevalence, I have instituted considerable enquiries in many of the districts where it was fatal, and now report to you the result.

Before doing so, it may be necessary to make a few general remarks respecting the peculiar manner in which an epidemic invades a given

district: There may be in a locality two causes which influence its effect, namely, predisposing and exciting. I will first explain what I mean by predisposing causes. A district or locality may be in a condition little calculated to maintain a high standard of health; it may be ill drained, its house accommodation bad in character, serious local nuisances may abound there, such as I have repeatedly drawn your attention to, and yet no zymotic disease exist among the inhabitants; but the malarious exhalations have rendered them susceptible, or what may be termed predisposed, to receive such diseases; after a time an epidemic invades a district, the *materies morbi* is introduced either by atmospheric means, as some suppose cholera spreads, or by a person infected with a contagious disease. Either of these cases furnishes the immediate or exciting cause, and then the predisposing influences produce their consequences, which have been only latent before, and instead of the disease being confined to the individual case, it spreads more or less extensively according to the extent of predisposition throughout the whole district.

I will now instance its application to the disease now under consideration. A given number of houses shall be overcrowded, shall be surrounded with malarious exhalations of every kind and description; but were they ever so overcrowded, or ever so much surrounded with exhalations, these could not produce small-pox, but they have predisposed them to receive it, or made them powerless to resist its invasion: presently a case of small pox is introduced among them, the exciting cause such as I have described has been furnished, immediately the predisposing influences work their effect, and I need hardly urge you to believe how much it is possible the condition of certain localities, of which I have from time to time reminded your board, may have influenced the fatal effect of a disease which resulted in 161 deaths.

Cardiff had been free from small pox for some years until January, when a death was registered from the Union; another fatal case occurred in the Union in February, but the disease did not make much progress until March, when it began to shew itself in the upper or northern part of the town, where three deaths were registered in Charlotte Street, one in William Street, Newtown, and another in the Union. In the early part of its progress it spread among seamen; those in Charlotte Street were many of them seamen in the boarding houses in that locality; some of the early cases in the workhouse were seamen brought from on board vessels, or from seamen's lodging houses; in May it extended into Newtown; but no case occurred, or

had a fatal termination, below the iron bridge in Bute Street until June, the upper district having suffered much from it; after this time it began to extend into the South or Bute Dock district, leaving its first haunts, and from September until December it existed principally in the neighbourhood of the Docks.

The following shews its rise and decrease as instanced by its fatality:—

In January .....	1 death.
„ February .....	1 „
„ March .....	5 „
„ April .....	8 „
„ May .....	42 „
„ June .....	35 „
„ July .....	19 „
„ August .....	14 „
„ September .....	14 „
„ October .....	13 „
„ November .....	7 „
„ December .....	2 „

161

It attained its greatest severity in May, after which time it gradually subsided.

I selected four adjoining streets, which from their peculiar position were sufficiently isolated from others, so as to furnish a distinct locality; they contained a population of nearly two thousand inhabitants, and comprised a class from whom, by perseverance, I could obtain a considerable amount of information.

I found vaccination in this locality had been tolerably efficiently carried out, but at the commencement of the epidemic there were many children unvaccinated. I visited this and other districts, and urged the process of vaccination, and as you will observe from the statements I am enabled to make, but few were left unvaccinated; some of these in consequence of an opposition on the part of parents to the possibility that danger might occur on the meeting of the two diseases, a fallacy which cannot be too strongly deprecated: for in many families, when a case of small-pox broke out, I vaccinated those in the house not having previously received this prophylactic protection, with the best possible results, as in almost every instance where the lymph was fresh and good, it took effect, and the children thus vaccinated escaped the epidemic. I had two instances where I vaccinated children; the children sickened a few hours after; the pustule of the arm rose, the small-pox eruption also broke out, and the two species of pustules



matured with equal rapidity, the pustule of the cow-pox had a more distinct and larger areola than the small-pox pustule; in both instances the disease progressed very favourably.

The following table illustrates the extent of small-pox, with its prevalence among children vaccinated and unvaccinated, in four adjoining streets, including private and lodging houses. The gross total of inmates in this table differs from a former one; the population having been taken after small pox, when the number of inmates had been somewhat reduced.

STREET.	No. Houses in each Street.	Gross Population in Street.	Adults.	Children.	CHILDREN.			Cases of Small pox among			Total cases of Small pox.
					Vaccinated.	Unvaccinated.	Previous attack of Small pox.	Adults.	Children Vaccinated.	Children Unvaccinated.	
Ellen-st. . .	33	465	279	186	158	20	8	3	2	20	25
William-st. . .	35	553	311	242	222	15	5	4	5	15	24
Thomas-st. . .	31	361	211	150	117	25	8	0	10	25	35
Pendoylan-st.	28	343	210	133	111	10	12	1	1	10	12
	127	1722	1011	711	608	70	33	8	18	70	96

This table very strongly illustrates the protective power of vaccination, as of 711 children exposed to the prevailing epidemic, 608 had been vaccinated; of these 18 only, or not quite 3 per cent. took the disease, the whole of whom passed through it in a very modified form, and no death occurred among them, while in several instances children who had been vaccinated occupied the same room, and frequently slept in the same bed with cases of small pox. As an instance, at No. 23, William-street, seven children occupied one room, six of whom had been vaccinated, one not; the unvaccinated child had confluent small-pox, the others escaped; the whole of the children unvaccinated succumbed to the epidemic.

In Ellen-street there was a population of 465, composed of 279 adults, and 186 children; these occupied 33 houses, giving an average of  $13\frac{1}{2}$  inmates to each house in this street; there occurred 25 cases of small-pox, and only one death. In the house where the fatal case occurred, I could not ascertain whether the father or mother had been vaccinated, but the children were composed of two families; the first family of four had been vaccinated, and did not take the small-pox; the second family had not been vaccinated; these succumbed to the disease; the father and mother also took it—the father died. In

another house there resided 12 adults and 6 children ; 5 of the children had been vaccinated ; the one unvaccinated had small-pox, being the only instance in the house.

In another house there were 10 adults and 9 children, all vaccinated ; 2 of the children vaccinated had an attack in the most modified form, being the only instance in this street of children taking the small-pox after vaccination.

In another house there resided 12 adults and 6 children, 5 had been vaccinated, 1 not ; the unvaccinated child took the disease in a confluent form ; the others occupied the same room throughout the whole of the time.

In another house containing 7 adults and 4 children, only 2 vaccinated, the two unvaccinated caught small pox. In William-street I was called to a house containing 10 adults and 4 children ; the children not vaccinated (2 of them) were suffering from small pox ; I vaccinated the other 2, they soon sickened of the epidemic ; both the small-pox and cow-pock passed through their stages together.

A similar circumstance occurred in another house in this street.

A house in Thomas-street contained 8 children ; 2 only of these escaped ; these had been vaccinated ; the remaining 6 had not been vaccinated ; they had small pox in a confluent form. One died in a house in Pendoylan-street ; there were 16 children ; 9 had been vaccinated and escaped the disease ; 4 had small pox previously ; 3 unvaccinated ; these three took the disease in a confluent form ; one died.

Of the 96 cases of small pox occurring in these four streets, 4 were fatal. This cannot be considered a high rate of mortality when we remember the class of people here resident, who if left to themselves would be little observant of sanitary precautions, the mortality being one in twenty-four.

I am now engaged in making further enquiries into the peculiarities connected with the recent small-pox epidemic ; but as these partake more of a character interesting to the profession than to the public, it is unnecessary the result should be introduced into this report.

Having thus detailed the sanitary condition of this town as evidenced by the mortuary rate of last year, I trust I have entered sufficiently into the various causes which may have operated so as to affect the health, and also to render the inhabitants predisposed to epidemic influences. I believe it more especially necessary you should under-

stand the value of sanitary regulations, inasmuch as we have too much reason to dread an early visitation of cholera. The General Board of Health called your attention to this assumed fact in the autumn, when an advance of that disease from the east was taking place, and some few cases of cholera were reported in this kingdom in the summer months; happily, as the winter came in the returns from that disease showed an arrest in its course; but we cannot disguise the fact, that upon every advent of this epidemic, a similar warning has been given. It is also to be borne in mind that the winter preceding the last visitation was unusually mild, similar to that we are passing through; it is therefore our duty, taught by this experience, to take every precaution, so as to place us in that position that, when another visitation unhappily comes, as come it will sooner or later, its death-bearing devastation may spread lightly over us.

To attain this benefit, I would urge on you to continue the improvements on the surface of the streets you have been recently carrying on; there are streets in Newtown some years completed, as Duffryn-street, Garth-street, Taff-street, Godfrey-street, and Morgan-street, yet these roadways are unfinished.

That your Inspector of Nuisances should pay especial attention to the back yards in Newtown, and in the Bute Dock districts.

That an improvement should be effected in the water-closets of the houses in the same localities.

That a still further reduction should gradually be made in the number of inmates of the registered and other lodging houses; and the prohibitions against the miscellaneous occupation of the sleeping apartments should be carried out.

I have the honour to be,

Gentlemen,

Your obedient servant,

H. J. PAINE,

*Officer of Health.*