

BOROUGH OF CARDIFF.

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OFFICER OF HEALTH'S

ANNUAL REPORT

*[for the year 1854]*

TO THE LOCAL BOARD,

FOR JANUARY, 1855.

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CARDIFF:

PRINTED AT THE "SILURIAN" OFFICE, ST. MARY STREET.

1855.

ANNUAL REPORT  
OF THE  
OFFICER OF HEALTH,  
TO THE  
CARDIFF LOCAL BOARD OF HEALTH.

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GENTLEMEN,

The General Board, in alluding to the duties of the Officer of Health, state that in this capacity they differ from the ordinary duties of a medical man; that he has to direct his attention not to the treatment but to the prevention of disease, to assist in carrying out that system of Hygiene which science and experience have shown so materially affects the sanitary condition of all, but more especially that of the labouring and poor classes.

The necessity of protecting the latter arises from the circumstance that, constantly exposed as they are to all the exciting and predisposing causes of disease, they do not recognize the poison lurking within and around their own dwellings, that poison which destroys their own health, which sends their offspring prematurely to the grave, or which renders them the diseased and miserable objects they are in after-life, and which, when an epidemic appears, makes its deadly influence severely felt, while others more careful of the danger altogether escape.

It is in carrying out their intentions I have to-day to call your attention to the prevalent sickness and mortality of the past year, and to particularize any circumstances which may have appeared to me so to have operated as to have caused any increased mortality during this period.

In considering the sanitary condition of Cardiff, it may be interesting to bear in mind that a line drawn from the Custom-house, continuing it on to Adamsdown, will divide the town into two tolerably equal portions as regards population and topographical peculiarities.

South of this line the town is built on an alluvial clay, the surface of which is in many parts below the level of high water.

North of this line it is built on a bed of gravel, and is above that level.

The South district experiences an amount of dampness which is not felt by the north, this obstructs the escape of surface water by downward percolation. The low level impedes the escape of the drainage by a water-course; hence the ditch from the South Wales railway to the Brickyard contains, in a stagnant state, the cesspool sewage and other impurities the of greater part of Newtown; in warm weather this becomes exceedingly offensive, and dangerous to health from the noxious gases which may be seen evolved from the surface in millions of bubbles.

In the north district, on the western side of Saint Mary-street is the abandoned bed of the river Taff, the course of this river having been diverted since the formation of the South Wales Railway; the only water passing through this bed is the Tanyard brook; this escapes under the South Wales railway by a culvert into the Channel: during high water the tide is imperfectly kept out by floodgates; the banks of the bed are at times covered, but during the time they are uncovered, all the drainage from the houses in St. Mary-street empties itself on the eastern bank, rendering it very offensive; during the past year this was much complained of by the inhabitants of the immediate neighbourhood.

The streets in Newtown and Butetown are not pitched; there is either no drainage, as in a greater part of Newtown, or, judging from its condition, a very imperfect one in Butetown.

During the past year, in both localities large pools of stagnant water existed, mixed with vegetable refuse and garbage.

The surface of the streets is raised artificially about four feet above the level of high water; but the houses with cellars have these necessarily below that level; from this circumstance they constantly contain stagnant water, at times emitting a most sickening smell. The cesspools, having no means of getting rid of their contents, in wet weather quickly fill, and I have repeatedly found cesspool soakings and ordure spreading itself over the back-lets.

The population of Cardiff yearly increases in an extraordinary degree: according to the three last censuses it stood as follows:—

In 1831	it consisted of	6,137	persons,
1841	"	10,077	"
1851	"	18,351	"

During the last ten years it increased annually at the rate of 8 per cent.; assuming the same rate to have continued since that period, the population may now be estimated at 23,000; but a large and unusual proportion of this population, it is important to bear in mind, consists of the labouring and poorer classes.

The number of inhabited houses, although much increasing, does not observe the same rate: thus, in 1831, with a population of 6,137, the number of houses was 1,191, or about five individuals to each house.

In 1851, the population having risen to 18,351, the houses numbered only 2,565, or seven to each house: this excess, it must be borne in mind, falling not on the class of houses which could receive it without injury; but upon the dwellings of the poor. According to returns I have been enabled to obtain, I find that the number of inmates in each house, of a very large majority in Newtown, particularly Ellen-street, William-street, Thomas-street, Pendoylan-street, and Tyndal-street, varies nightly from twelve to twenty persons; they are houses over which a sanitary Board can exercise little control, inasmuch as they do not come under the denomination of common lodging-houses, to which the lodging-house act only applies; each separate room being sublet to distinct families, they are constantly occupied night and day. Under such circumstances, ventilation, where it is most needed, is necessarily most imperfect.

I have now to direct your attention to the mortality of Cardiff. In order to enable you to form an accurate idea of its extent, I have prepared the following table, showing the annual mortality for the last five years. I have distinguished the deaths occasioned by epidemic and endemic diseases:—

Years.	Deaths from Accidents.	Deaths from Epidemic and Endemic Diseases.	Deaths from Sporadic and other Causes.	Total.
1850	33	117	345	495
1851	45	102	378	525
1852	30	205	47	642
1853	60	139	445	644
1854	60	368	507	925

An examination of this table, under the head of sporadic and general causes, shows there has been a gradual and progressive increase in the number of deaths, merely proportionate to the increasing population; but a great irregularity is evinced under the head of "Deaths occasioned by endemic and epidemic influences;" the mortality from these causes requiring your most serious consideration, inasmuch as the legislature has delegated to you powers with the view of lessening their effect.

The number of births and deaths in 1854 was as follows:—

	Births.	Deaths.	
Winter Quarter....	245	.. 141	
Spring Quarter....	251	.. 215	
Summer Quarter ..	244	.. 287	
Autumn Quarter ..	213	.. 222	
	953	805	
		60	Deaths from Accidents not enumerated in the above, on which Inquests were held.
		925	

It will be observed in the summer and autumn quarters the deaths from disease exceeded the births by 52, and including the number of inquests, which are estimated on the half-year at 30, the excess of deaths over births will be 82.

In calculating as to the healthiness of a locality, it has been usual

to compare the number of deaths with the births, and in districts where the population increases only by its own natural resources this may be considered; but it cannot fairly apply to a town peculiarly situated as Cardiff is, there being a constant influx of strangers, a large proportion of whom, in consequence of the facility of transit, are of the lowest class of labourers and Irish mendicants, who arrive in a starving condition, many already suffering from disease, others bringing with them the germs of it. Poverty-stricken and reckless, they seek the wretched shelter of the over-crowded lodging-house, they quickly sicken with fever, spreading it among those with whom they come in contact: thus they contribute more largely to the death than the birth returns.

The following is an analysis of the Mortuary Tables for 1854:—

<i>Winter Quarter.</i>		<i>Mortality at Certain Ages.</i>	
January .....	42	Under one year .....	254
February .....	38	„ Two years .....	96
March .....	61—141	„ Three years .....	46
<i>Spring Quarter.</i>		„ Four years .....	35
April .....	102	„ Five years .....	17
May .....	61	Five under ten .....	46
June .....	52—215	Ten „ twenty .....	51
<i>Summer Quarter.</i>		Twenty „ thirty .....	84
July .....	48	Thirty „ forty .....	76
August .....	85	Forty „ fifty .....	43
September .....	154—287	Fifty „ sixty .....	40
<i>Autumn Quarter.</i>		Sixty „ seventy .....	28
October .....	119	Seventy „ eighty .....	29
November .....	54	Eighty upwards .....	20
December .....	49—222		
	865		865
Inquests .....	60	Inquests .....	60
	925		925

The whole of the inquests not having been registered at the time in which I constructed these tables, I am not enabled to state the precise number; I have therefore put them down as 60, the first three quarters being 45; nor is the exact number of any importance, as it in no way bears on the sanitary condition of the town.

I have selected the following towns with their proportionate mortality during a twelvemonth when no epidemic diseases to any extent prevailed, in order to enable you to form an opinion of the degree of mortality in Cardiff:—

The Metropolis ... ..	20.40 per thousand.
Liverpool ... ..	30.50 „
Bath ... ..	20.60 „
Bristol ... ..	30.10 „
Clifton .. ..	20.10 „
Cardiff in 1853 ... ..	30.66 „

The proportionate mortality in these towns I have selected as offering a fair criterion as to the extent in which the mortality may be influenced by peculiarity of situation, and the natural constitution of their inhabitants; thus there are many similarities between Cardiff and Liverpool; and how near do they approach in proportionate mortality! Then comes Bristol,

while Bath and Clifton, with a more opulent population, and with greater salubrity as regards situation, approach nearly to the mortality of the rural districts.

The following Tables contrast the mortality of 1853 and 1854:—

1853.  
*Diseases of Brain and Nervous Systems.*

Convulsions.....	67
Hydrocephalus ....	11
Inflammation of Brain	8
Apoplexy .....	2
Paralysis .....	4
Epilepsy .....	3—95

*Diseases of Chest.*

Phthisis .....	111
Bronchitis .....	24
Inflammation of Lungs	32
Pleurisy .....	1
Croup .....	6
Asthma .....	2—176
Diseases of Heart ....	2
"    Kidney ....	1
"    Womb ....	3

Diseases of Stomach	3
"    Liver ..	8
Inflammation of Bowels	4
Stricture Æsophagus	1—16

*Epidemic and Endemic Diseases*

Fever .....	38
"    Puerperal .....	6
"    Scarlet .....	1
Measles .....	1
Small Pox .....	42
Erysipelas .....	4
Hoping Cough ....	20
Diarrhœa .....	22
Cholera .....	5—139

*Sporadic Diseases of Uncertain Seats.*

Gangrene .....	2
Cancer .....	3
Scrofula .....	1
Syphilis .....	4
Hæmorrhage .....	1
Dropsy .....	9
Age .....	34
Atrophy and Mesenteric Diseases	53—107
Inquests .....	60
Hydrophobia .....	1
Teething .....	1
Unknown .....	23
Other Diseases .....	11

1854.

*Diseases of Brain and Nervous Systems.*

Convulsions .....	81
Inflammation & Diseases of Brain....	13
Hydrocephalus ....	8
Apoplexy .....	1
Paralysis .....	6
Epilepsy .....	3
Delirium Tremens ..	2—114

*Diseases of Chest.*

Phthisis .....	78
Bronchitis .....	14
Inflammation of Lungs	38
Croup .....	8
Hydrothorax .....	1
Asthma.....	3—142

Diseases of Heart ....	6
"    Kidney ....	3
"    Womb ....	1
"    Stomach	
and Bowels .....	19
"    Liver ..	9—28

*Epidemic and Endemic Diseases*

Fever .....	18
"    Scarlet .....	36
"    Puerperal ....	5
Measles .....	96
Small Pox .....	1
Hoping Cough ....	1
Diarrhœa .....	25
Cholera .....	175
Dysentery.....	1—358

Cancer .....	5
Scrofula .....	6
Syphilis .....	3
Gangrene .....	1
Hæmorrhage .....	3
Dropsy .....	14
Age .....	34
Atrophy and Mesenteric Diseases	75
Abscess .....	1—142
Inquests.....	60
Teething.....	26
Unknown .....	22
Other Diseases .....	20
Hernia .....	1
Accidents .....	3

Streets, &c., in which a certain number of deaths have occurred during

1854:—

NORTH DISTRICT.		EAST DISTRICT.		WEST DISTRICT.	
White Horse-bridge.	1	Ebenezer-street.....	2	St. Mary-street.....	15
Angel-street.....	2	Uolo-street.....	8	Land-re-court.....	8
Duke-street.....	8	Frederick-street.....	23	Charlotte-street.....	10
Castle-street.....	4	Holl-terrace.....	10	Caroline-street.....	8
North-street.....	2	Bridge-street.....	23	Mill-lane.....	13
High-street.....	3	Little Frederick-st..	5	Hayes.....	14
South-street.....	3	Love-lane.....	14	Evans's-court.....	3
Crockherbtown.....	11	Millicent-street.....	34	Tabernacle court.....	1
Charles-street.....	3	Mary Ann-street.....	17	Working-street.....	9
Paradise-place.....	5	David-street.....	9	Wharton street.....	5
Sjittall.....	1	Rodney-street.....	9	Whitmore-lane.....	7
Spring-gardens.....	3	Superna-street.....	7	Rowe-square.....	4
Vacca-lane.....	1	Hornfray-street.....	10	Quay-street.....	2
Vacbell's-court.....	2	Tredegar-street.....	8	Court Coleman-row.....	4
Jones's court.....	1	Stanley-street.....	12	Union-buildings.....	5
Pritchard's-court.....	3	East-terrace.....	3	Bakers-row.....	5
Masons' Arms-court.....	1	Cross-street.....	1	Wharf.....	1
Tonnell.....	7	Barre's.....	1	Kenton's-court.....	3
Clauich-street.....	1	Jenkins-court.....	1	Winstone's-court.....	3
Womanby-street.....	5			Thomas's court.....	3
Allen-bank.....	1	PUBLIC INSTITUTIONS.		Kirkpatrick-court.....	2
Blackweir.....	1	Union.....	41	Perth-place.....	2
Little-farm.....	1	Refuge.....	12	Little-mill.....	1
Bute-villa.....	1	Infirmaty.....	4	Old Gas-yard.....	1
Queen-street.....	5			Carpenters' Arms-ct. ....	1
St. John street.....	4			Waterloo.....	1
Trinity-street.....	3				
SOUTH DISTRICT.		NEW TOWN DISTRICT.			
Bute-street.....	14	Bute-docks.....	2	Adam-street.....	8
John-street.....	9	Sophia-street.....	8	Pellett-street.....	3
Chrichton-street.....	9	South Church-street.....	2	Garth-street.....	3
Chiehton-place.....	2	Nelson-street.....	6	Tuff-street.....	2
North Church-street.....	4	West Bute-street.....	11	Duffryn-street.....	5
	8	Francis-street.....	4	Godfrey-street.....	6
Peel-street.....	10	Adelaide-street.....	3	Ivor-street.....	5
Maria-street.....	14	Henry-street.....	4	Pendoylan-street.....	12
Christina-street.....	14	London-square.....	2	Ellen-street.....	24
Frederica-street.....	5	Patrick-street.....	6	Thomas-street.....	15
Dry-dock.....	4	Evelyn-street.....	1	William-street.....	21
Alice-street.....	10	Hannah-street.....	1	Tyndall street.....	12
George-street.....	14	Rothsay-terrace.....	1	South-terrace.....	1
James-street.....	9	Old-lock.....	4	Morgan street.....	9
Herbert-street.....	3	Bute-terrace.....	3	Noah street.....	3
Louisa-street.....	14	On Board Ship.....	20		
Stuart-street.....	7				

The foregoing Tables demonstrate that during the last year the mortality was unusually large, the deaths in 1853 were 614; but in 1854 they had risen to 925; and although some allowance is to be made for the increase of population, yet the relative proportion of the two years stands thus—

Year.	Population.	Deaths.	Rate per thousand.
1853	21,400	624	30.66
1854	23,000	925	40.21

The *pro rata* increase has been therefore one-fourth; but in order to show that their high rate of mortality exists only in certain localities, and in which, according to circumstances I shall have occasion hereafter to speak of, are to be found strong predisposing and exciting causes of

disease, I have ascertained the number of houses, the population, and the mortality of the following streets:—

Street	Houses. No.	Popu- lation.	De-aths.	Rate per Thou- sand of Deaths.	Class of Inhabitants.
Ellen-street	33	487	24	64.71	} Principally Irish la- bourers and men- dicants.
Pendoylan-st	29	319	12	37.61	
William-st...	33	429	21	48.92	
Thomas-st...	18	340	15	44.11	
Total ...	123	1526	72	47.17	
Crockherbto	64	402	11	25.85	} Gentry, profes- sionals and others
Charles-st..	35	222	3	13.51	
High-street	31	176	3	17.03	
Angel-street	17	92	2	23.92	
Total ...	147	892	19	21.30	Tradesmen & others Ditto ditto.

By a reference to the Tables showing the cause of death, we find that in diseases of the brain and nervous system there has been a slight increase on the year; in diseases of the chest a decrease,—consumption being less fatal. Among the abdominal diseases there has been a slight increase, as also in diseases of uncertain seat. But the great increase has taken place in deaths from epidemic diseases; and as these diseases are supposed to be more or less occasioned by removeable causes, they are of great interest to yourselves as a sanitary Board.

The principal epidemic diseases prevalent in Cardiff during the past year were measles, scarlatina, fever, cholera, and diarrhoea.

Measles broke out in the spring, continuing through April, May, and June. The spring was very unpropitious, the weather being cold and at times wet. This disease had not visited Cardiff for some time, hence a large number of children were obnoxious to its influence. In order to ascertain its extent and severity I selected two streets for inquiry, and I found that in Ellen-street 79 cases and three deaths; in William-street 89 cases and four deaths had occurred, the mean average of fatality being 4.31 per cent., the usual average 3; it had therefore increased rather more than 1 per cent, by no means a larger increase than might have been expected, considering the unfavourable state of the weather, this materially interfering with the eruptive process, retrocession of which was very common, producing pneumonia and death: the number of deaths registered from measles was 96.

Scarlatina was fatal in 36 instances.

These two epidemics added largely to the rate of mortality in infantile ages: the number of deaths under ten years of age being 494 of the total number 922, or rather more than 53 per cent. Fever has occasioned this year but little mortality, the number of deaths registered from that cause being only 18.

I have now to direct your attention to that most serious epidemic which upon two occasions has spread itself with such fatal effect among the inhabitants of Cardiff. The experience resulting from observation throughout the kingdom in 1848-49 clearly established the fact, that



cholera is, of all other diseases, the one most materially influenced by local excitants. Introduced into the kingdom it rapidly extends through the length and breadth of the land, but with different degrees of intensity. In agricultural districts and villages it is little if at all felt, varying in towns according to their sanitary condition, and even in different districts of the same town; everything that has as yet been noticed proves this important fact; thus it becomes your duty to consider, as it is mine to point out, every possible cause capable of increasing or diminishing its effect.

There is an analogy in its progress over large surfaces and in small localities; it is therefore highly important that in every outbreak in any district, the mode of its introduction, its progress, and its peculiarities, should be observed, more especially as we have every reason to believe that cholera has now become endemic in this country; and as we are successful in recognizing each separate law regulating this disease, so we may hope ultimately to render it infinitely less fatal. The Plague, formerly a disease of this country, disappeared when the excitants of it were removed; small-pox, by a system of prophylaxis, is now little dreaded; and how rarely we meet with typhus in that dreadful epidemic form that used to visit us!

The severe visitation of cholera in this town, in 1849, had caused us for some months to view with considerable anxiety the probability of another advent of this disease—the great increase in our population, that population constituted, as I have before stated, of a very large proportion of those classes least observant of sanitary precautions—the Irish labourer and Irish mendicant, residing in localities where all the essentials of disease existed in an intense degree. Crowded together in houses where there was little ventilation, they generated a poisoned atmosphere within; the condition of the streets in front, the back-lots behind the houses, caused malaria without: under such circumstances it had been my constant endeavour to bring before your notice matters such as these, in order, where practicable, to provide for their removal or amelioration; added to these, was the unfortunate absence of effectual drainage.

I have now to detail the circumstances under which it appeared in its recent visitation. As early as November, 1853, the first cases occurred: upon this occasion, a poor man who, the night previous to his seizure, had arrived at Cardiff from Bristol, was found by the police early in the morning suffering from all the symptoms of spasmodic cholera in the street, near Bute-terrace; he was removed immediately to the House of Refuge. The inmates of this establishment, up to this period, had been perfectly free from anything like diarrhoeal disease. The poor fellow passed through all the stages of cholera, and ultimately recovered; but a few hours after this introduction into the House of Refuge, the master was seized with that disease and died, as also one of the inmates, and serous diarrhoea rapidly spread among the rest. Near to the House of Refuge was a very offensive ditch, containing stagnant water and sewage: believing this to operate very injuriously by aggravating the effects of the disease, I reported this to the authorities, and the nuisance was abated; immediately upon this the cholera and diarrhoea ceased, no fresh case occurring: three other

fatal cases of cholera were registered in the district, but these all occurred before the ditch was filled up.

The facts which I desire here to impress upon your minds are the following: that the cases presented all the characteristics of malignant cholera, the several stages of that disease being well marked, the fatal cases terminating within a few hours,—there could therefore be no doubt as to the character of the disease: that the disease was introduced by an imported case into a district where a local predisposing cause existed: that the inhabitants, from this cause, had been rendered obnoxious to the disease: and that upon the removal of this cause the disease wholly ceased. It is therefore a fair inference that, but for the introduction of the choleraic virus, in this instance of feeble intensity, the district, although predisposed by the local excitant, would not have suffered from cholera, as other districts where the same excitants have existed, escape—and that cholera being introduced, a removal of the local predisposing or exciting causes is sufficient to abate the disease. I shall be enabled still further to corroborate this inference, as I bring before your notice specialties connected with its progress in the later history of the outbreaks in Cardiff.

Upon the cessation of the outbreak, in November, no other cases of cholera occurred until the month of March, being an interval of four months: On the fourth of this month, I was called to two cases of cholera—one a child, in Kenton's-court, the other an adult, in Union-buildings;—both localities were of the description favourable to the development of the disease, as will appear in the subjoined register:—

No. of House.	Locality.	No. of Cases.	Termination.		Probable Local Excitants.
			Death	Recovery	
7	Kenton's Court...	1	1	0	Filthy Irish lodging-house; bad ventilation; no water; offensive nuisance.
10	Ditto ditto.....	1	0	1	In same condition.
17	Union Buildings..	1	0	1	Crowded Irish lodging-house; no water.
6	Tunnell.....	3	1	2	Filthy Irish lodging-house; no water; no privy; no thorough ventilation.
7	Ditto ditto.....	1	1	0	In same condition.
1	Whitmore Lane...	2	2	0	Ill-ventilated Irish lodging-house; no water; offensive drain continuing.
3	Ditto ditto.....	1	1	0	In same condition.
	Love Lane.....	1	0	1	Over crowded Irish lodging-house; no water.
2	Ellen Street.....	3	2	1	Over crowded Irish lodging-house.
	Bute Town.....	1	1	0	No discovered excitant, but was a lodging-house with imperfect ventilation.
		15	9	6	

From the above table it will be seen that in only one case did I fail to discover an exciting cause of disease. This outbreak differs from the previous one, in that it assumed more of an epidemic form; it developed itself in different parts of the town, extending over a period of seventeen days; it differed in no degree from malignant cholera—each case was well marked in all the stages; the proportionate mortality very great: we have therefore every reason to believe that the disease was then present in Cardiff in an epidemic form of feeble intensity, but again developing itself only where a certain amount of predisposing causes existed.

I could not, upon this occasion, discover any evidence of importation; the first two cases I knew to be residents of Cardiff; there was no connecting link between them—the disease seized them both on the same day: this question therefore presents itself—Can cholera be originated in a locality, *sua sponte*, a certain amount of excitants of disease present being sufficient to produce it? Assuming it to have been in an epidemic form, it was very important to find it did not extend into districts where sanitary regulations were better observed; while in the infected districts we are justified in considering that immediately upon the disease manifesting itself, the sanitary supervision adopted, the means taken to remove all kinds of nuisances, compelling the dwellings of the poor to be cleansed, disinfected and lime-washed, establishing a better if not perfect system of ventilation,—all these measures materially lessened the effect, if it did not altogether destroy the virus of the disease.

After the 21st of March, no death was registered as from cholera for a period of upwards of four months. I had in writing called the attention of the medical gentlemen of this town, in March, to the existence of cholera, and requested information from them in the event of any case coming under their individual experience at all partaking of choleraic character; and I also made oral inquiries upon several occasions, the reply being, "No cholera had come under their notice;" that diarrhoea, even of a biliary character, was rarely met with; and upon referring to the register, only eight deaths from diseases of the bowels are recorded from April until July,—these include all diseases of the bowels, such as inflammatory, such as intestinal irritation from dentition in children, as well as biliary diarrhoea; my own experience among the sick poor confirms this, and I had no difficulty in arriving at the conclusion that, after the last case of cholera, on the 21st, the town was free from the disease.

On July the 18th, a sailor on board an Austrian vessel was visited, suffering from cholera; he was removed to a house in Louisa street, where he died; but no extension of the disease followed.

On the 11th day of August, the medical gentleman in attendance, Dr. Wallace, reported to me the case of a seaman on board the barque *Emilie*, from Marseilles, who died of cholera.

The following day he reported another case, on board the *Enrichetta*, also a foreigner: this terminated fatally, as likewise a custom-house officer, who has taken ill on board a vessel from America; the latter had been in

ill health previously, and on the 12th of August had committed great indiscretion in diet; it was generally credited that cholera had occurred on board this vessel on her passage, but I could get no reliable information of the fact, and I was inclined to believe this case purely sporadic cholera, occasioned by irregular living.

On the 18th, I was summoned to a seaman residing in Millicent street, who had a few days previously returned from Alexandria; when he came on shore he was labouring under diarrhoea—was very intemperate, being inebriated for two or three days, and on the 16th took a large dose of salts—serous diarrhoea supervened, cholera, and death.

On the 21st, a sailor was brought ashore from on board a vessel, and conveyed in a collapsed condition to No. 48, Millicent street; one of the men who accompanied him came for me, I immediately visited the case; they were then conveying him upstairs; the landlady of the house gave me his history,—namely, that he was a native of Carmarthen; that a week before he engaged himself for this vessel, having been lodging with her for some time; he then left her house in perfect health. I gave directions as to treatment, but believing they did not clearly understand the directions I had previously given, I visited the case again, not being absent twenty minutes: I was, while talking to the patient, summoned to the next room, and found the landlady (who, on my first visit, appeared in good health, but, as well as the other inmates, greatly alarmed,) suffering from all the symptoms of cholera, and fast passing into collapse; in the afternoon, her daughter, a child of four years, was seized: they both died that evening: in the course of the night a sailor who assisted in nursing the first case was seized, and died the following day: a fatal case also occurred in the next house.

On the 21st, a case was reported to me of a sailor at No. 10, Nelson-street; I visited him, and found him sinking: the history given me was, that he had returned a few days previously from abroad; that he had drunk very largely,—and, to use his own phrase, taken a very large dose of salts to carry the drink off: he died.

On the 22nd, a second case occurred at 47, Millicent-street.—On the 23rd, the poor woman who had nursed unceasingly the cases at 48, was taken ill, and died the following day. I had urged on her to take rest, and offered to get nurses to relieve her, but she resolutely refused, and died a victim to her exertions. Other cases then followed in the same street, but, except in one instance, all confined to those connected with the infected houses.

After this date, the disease showed itself in different parts of the town. The following table illustrates the various localities in which fatal cases of cholera occurred.

On the present occasion I have divided the town into two districts,—the North being that portion built on the gravel; the South, that on the alluvial clay.

## SOUTH DISTRICT.

No. of cases.		
Bute-street	4	Offensive nuisance.
Crichton-street	4	Offensive streets with garbage.
John-street	3	Offensive nuisance and bad condition of property.
Thomas-street	3	Offensive nuisance; streets in bad condition.
William-street	2	Ditto ditto
Ellen-street	5	Ditto ditto
Tyndall-street	2	Ditto ditto
North Church-street	2	
West Church-street	1	Street with garbage.
Peel-street	2	Offensive nuisances.
Maria-street	1	House dirty; streets with garbage.
Christina-street	1	Offensive nuisance; street with garbage.
Frederica-street	2	Streets in bad condition from garbage.
Nelson-street	1	Offensive cellar; street with garbage.
Sophia-street	1	Street with garbage.
Henry-street	1	Ditto.
Alice-street	4	Offensive nuisance; street with garbage.
Patrick-street	3	One house clean, the other dirty.
West Bute-street	2	One house very dirty; manure and pigsty in yard.
James-street	3	
George-street	2	One house very dirty.
Stuart-street	2	
Louisa-street	2	Offensive nuisance.
Margaret-street	1	
Rothsay-terrace	1	
Bute-docks	1	
Dock-road	1	
Old Sea-lock	2	
On Board Ship	14	

## NORTH DISTRICT:

No. of cases.		
Duke-street	1	Offensive drain through house.
North-street	1	
Angel-street	1	Pump bad.
St. Mary-street	5	Offensive smell from old bed of river.
Laodore-court	2	Offensive nuisance; house dirty.
Dalton's-court	2	
Galner's-court	1	
Caroline-street	2	House dirty in one instance.
Charlotte-street	4	Houses dirty; offensive nuisance.
Whitmore-lane	1	House dirty.
Working-street	3	No privy; no water supply.
Thomas's-court	1	Bad drain in front.
Winstone's-court	2	Offensive nuisance.
Kirkpatrick-court	2	Ditto.
Rowe-square	1	
Old Gas-court	1	Offensive nuisance.
Hayes	3	Offensive nuisance; no water.
Evaos's-court	3	Court in offensive state.
Perth-place	1	House dirty; offensive nuisance.
Union-buildings	1	House dirty.
Baker's-row	1	
Green-gardens	1	Offensive nuisance.
Court Coleman-row	1	Ditto.
Mill-lane	2	Ditto; houses dirty.
Tredegar-street	2	
Rodney-street	1	
Raperra-street	2	House dirty; offensive nuisance.
Hill's-terrace	1	
Canal-back	2	
Canal-street	3	
Frederick-street	3	Offensive nuisance.

## NORTH DISTRICT—CONTINUED.

No. of Cases.	
Friend's-place.....	1
Paradise-place.....	1
Union-street.....	2
Bridge-street.....	5
Millicent-street.....	16
Mary Ann-street.....	2
Stanley-street.....	1
East-street.....	4
Noah-street.....	1
Morgan-street.....	3
Godfrey-street.....	2
Refuge.....	2
White Horse-bridge	1

Offensive nuisance.  
 In two houses offensive nuisance.  
 Houses occupied in apartments; no out-let.  
 House dirty.  
 In one house offensive nuisance.  
 House dirty; stagnant water in cellar.  
 Two houses dirty; one offensive nuisance.  
 Offensive condition of property generally.

The remarks denote the particular exciting cause of disease, discovered on the spot; it will therefore be necessary, before describing the further progress of the disease, to mention some of the most prominent excitants which are supposed to exercise an influence over epidemic disease: these are—

First, a vitiated condition of atmosphere, occasioned by peculiarity of locality,—such as a town situated on a sea coast, or bank of a tidal river; or where it possesses an imperfect drainage: these affect the health of a district generally, but more especially those parts of it more exposed to their particular influence.

Secondly, the atmosphere of privies, cesspools, pigstyes, and the exhalations arising from decomposing animal and vegetable matter. These excitants frequently give rise to diarrhoeal disease and fever.

Thirdly, overcrowded dwellings, with deficient ventilation; this operates by causing a considerable quantity of carbonic acid, with impure animal matter, to be suspended in the atmosphere, and received into the circulation during the process of respiration.

Fourthly, defective and impure supply of water; the first, by interfering with the process of cleanliness,—the latter, by introducing noxious matter into the circulation.

Filth, dampness of dwelling-houses.

These are the class of excitants of disease admitting of mitigation or removal: to these may be added causes dependent on the individual; such as—

Intemperance, excess of diet, and other irregularities, over-fatigue, mental depression, and fear.

There is a strong confirmatory fact of the influence of these local excitants on cholera, which I have on several occasions met with; it is, that at a time when the town has been entirely free from disease of the bowels, I have been called to a case resembling in every characteristic malignant cholera, I have been enabled to detect in the house, or sufficiently close to impregnate the house with the poison, some most serious nuisance—I will mention one case: in 1851, a poor woman, residing in Love-lane,

was taken ill with all the symptoms of cholera; when I visited her she was perfectly collapsed, pulseless, purple, and cold; her eyes sunken; her voice suspirous, with suppression of urine for some hours: a most disgusting smell pervaded the whole house: upon examination, a drain passing through the house had been opened the day previous, owing to an obstruction, but not being able to close it overnight, the occupier had covered it loosely with planks: its contents were very offensive, and emitted copiously poisonous gases, which must have saturated the atmosphere of the whole house. I used deodorizing agents, and had the drain properly closed; the poor woman ultimately recovered.

The advantages derivable from a proper system of sanitary regulation are exemplified by the entire absence of diseases of the bowels, during the whole period of the epidemic, at the County Gaol, the daily average number of inmates being 91.

In endeavouring to instance the effect of the exciting causes during the recent epidemic, I have to allude to the peculiar local situation of Cardiff, situated on the coast of the Channel; the tide receding, at low water, for a considerable distance, at this time leaves a large surface of mud exposed to every source that may contribute to occasion exhalations; while on the eastern side of the town, the river Taff, also affected by the state of tide, rises and falls; it is therefore unfavourably situated for health, as regards locality.

Respecting the drainage,—the town, hitherto in a deplorable condition, doubtless contributed very largely to the amount of sickness, as it prevented in many parts of the town, particularly Newtown and Butetown, the escape of the surface sewage, and in these localities the disease produced a large amount of mortality.

The injurious effects of the atmosphere, arising from privies and cesspools, was severely felt through the whole of the north district, comprising Butetown and part of Newtown, as here 73 deaths are recorded; in that part of the south district, comprising part of Newtown and the lower portion of the Old Town, 45 deaths are recorded: in these two localities 56 houses were reported in this condition, while the surface of the streets, as before mentioned, contained a large accumulation of animal and vegetable decaying matter and stagnant water; the condition of the streets also precluded any possibility of carting the nuisances away. Thus, out of the entire number of deaths, 109 may have been said, in these localities alone, to have been more or less resulting from this most serious condition; while again, in some of the old portions of the town—as in Duke-street—the only death occurred was in a house suffering from a drain communicating with the privy passing through the house emitting a most sickening smell.

The overcrowded lodging-houses exist more especially in Newtown; four-fifths of the houses in this locality are of this class; and with these I experienced the greatest difficulty in prosecuting sanitary improvement; not being registered, they did not come under my supervision unless disease

had developed itself; the means then adopted could only necessarily be palliatory. A defective supply of water existed more especially in the early part of the epidemic. This evil was met promptly by your Board, and a much more abundant supply was granted by the owners of property.

I have now to draw attention to the relative mortality of the epidemics of 1849 and 1854:—

Year	Population	Cholera	Diarrhea	Total	Proportion to Mortality per thousand to Population.
1849	16,000	347	36	383	23.93
1854	23,000	175	16	191	8.30

It will thus be seen that, although the individual cases were equally severe, the aggregate number was reduced by two-thirds; and it is but fair inference that the epidemic influence was thus most satisfactorily diminished by your Board and the executive acting under you: to exemplify this, I will contrast its effect during the recent epidemic in certain streets, as compared with that of 1849:—

*Streets over which sanitary supervision had been adopted.*

	Cholera in 1849.	Cholera 1854.
Kenton's-court	13	0
Landore-court	12	2
Stanley-street	19	1
Love-lane	8	4
Whitmore-lane	17	1
Mary Ann-street	12	2
David-street	12	0
	93	10

*Streets not ameliorated.*

Millcut-street	18	16
Bridge-street	5	5
Great Frederick-street	4	3
	27	24

The above offer a very fair comparison of the effect of the sanitary supervision. In the first section of seven streets, in 1849, the epidemic was very severe, there being in these streets, on this occasion, 93 deaths; the houses were then occupied, as now, by labourers, indigent and mendicant Irish, but nearly the whole of them were over crowded, except David-street—and in this street there were some houses of this description—dirty to an extreme degree; no ventilation—no water; but now, under the Common Lodging-house Act, they are still occupied by the same class, yet reduced in numbers: the rooms are cleansed and limewashed at certain intervals; our inspector visits them daily to see if they are in proper order; the windows of the sleeping apartments are in the day time opened, the bed-clothes thrown back & there is an abundance of water supply, and the deaths from the epidemic of 1854 were only 10. The inhabitants of the



streets are also much improved in general health: fever, even in isolated cases, is rarely met with, and the yearly mortality of them very materially lessened; but Millicent-street, Bridge-street, and Grant Frederick-street, owing to your inability to apply the Lodging-house Act, remained in the same state as in 1849: the mortality in these streets from the disease was 27 in 1849, and 24 in 1855.

I observed, during the progress of the recent epidemic, several peculiarities of which I have selected the following: viz. that upon this occasion, diarrhœa, in a simple form, did not exist in so great a degree, in proportion to the cases of confirmed cholera, as in 1849; and I am inclined to attribute this to the circumstance that cholera, having become indigenous to the country, all diarrhœal diseases have a tendency to assume a choleraic form. I believe that the experience of my professional brethren will corroborate this. In 1854, I was in a better position to form an opinion on this fact from the office I hold under your Board, it being my duty to ascertain, as nearly as I can, the extent or prevalence of any disease, and I availed myself of the powers granted me to adopt house-visitation, with the view of making this inquiry. The number of cases treated by myself was 155 cases of cholera, and 371 cases of diarrhœa; thus the proportion of diarrhœa cases to confirmed cholera little exceeded 2 to 1.

Another circumstance, important for the public generally to bear in mind, is the frequent absence of pain during the premonitory diarrhœa, as this is calculated to mislead the sufferer as to the presence of danger and thus prevent him seeking assistance in the very stage when assistance can be of most service: this peculiarity arises from the dejecta being serous, and therefore not irritating to the bowels: it is only when the spasms supervene that he becomes conscious of his condition; hence arises the circumstance that in many instances cholera has been supposed to come on suddenly without premonitory symptoms in the early part of the epidemic. I was misled by the statement of the patient to believe in the frequency of this sudden invasion; it was only in after experience I had reason to doubt it; I then made in every case a more minute investigation, and ascertained the fact that patients too often dated the commencement of their illness only from the commencement of pain. When the dejecta are bilious and consequently less dangerous, the patient experiences the griping pain, and becomes unnecessarily alarmed.

During a cholera epidemic, the disease has been excited in a new locality by a sporadic cause, it afterwards spreads itself generally. In Egan's court, an Irishman had been drinking the whole of Saturday and Sunday; the early part of Sunday night he was seized with vomiting of the undigested portion of the contents of his stomach mixed with beer, also diarrhœa; in a very short time spasms supervened; his wife exerted herself in endeavouring to relieve his pains by friction, and while engaged in this was seized with cholera: I was called to her between four and five o'clock on Monday morning; the husband was collapsed, but ultimately recovered; the wife was fast passing into collapse,—she died in

the evening. About ten o'clock in the same morning the messenger who came for me, a few hours previously, was seized with cholera, and died in the evening, a short time after the woman.

A lad residing in Winstone's-court, Trinity-street, had been executing errands for a fruiterer in the market; he had been rewarded with apples and plums *ad libitum*; he was seized during the night with vomiting of large quantities of undigested fruit; diarrhoea soon came on; this passed into cholera, and he died. The next day a baby at the breast was seized with cholera, and died. On Tuesday a young girl in the same house was taken ill, but after passing through all the stages, recovered. These cases are interesting, as showing that an error of diet or other imprudence may be attended with fatal consequences, not only to the offender, but to those who are innocent, but who unfortunately reside in the same dwelling.

The subjoined table illustrates the progress of the disease, by the number of deaths occurring in each week:—

The week ending	Deaths.
March 18	4
" " 25	9
" " Sept. 1	15
" " " 8	14
" " " 15	9
" " " 22	24
" " " 29	24
" " Oct. 6	20
" " " 13	16
" " " 20	3
" " " 27	13
" " Nov. 3	7
" " " 10	8
" " " 17	3

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The first death was reported on the 11th day of August; the last on the 11th of November. The epidemic attained its greatest height during the four weeks ending October 13, during that period 86 deaths were registered.

The following is the mortality from cholera among different classes:—

Seamen	30
Shipwrights	6
Sailmakers	2
Customs Officers	2
Agents and Clerks	4
Mechanics and Labourers	101
Tradespeople	18
Innkeepers	3
Contractor	1
Soldiers	2
Farmers	2

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It will be thus observed that 44, or above one-fourth of the whole mortality, occurred among the shipping or those connected with it; viz. seamen, shipwrights, sailmakers, agents, clerks, and Customs' officers;

moreover, it appeared to have been introduced by the shipping, and for some time confined itself to this class.

It was very severe among the mechanics and labouring classes; this was naturally to be expected, inasmuch as their manner of living more or less predisposed them to a susceptibility of its influence. Among the trades five were masters, or their families; the rest were journeymen or apprentices.

The two cases of farmers—one was a wife, residing in the country; upon being informed that her daughter in Cardiff was ill of cholera, she became alarmed; her bowels were disturbed; she came to nurse her daughter; in a few hours choleraic symptoms supervened, and she died. The other was that of a farmer, who lived near the town, of very irregular habits, and surrounding his house in every direction was manure and stagnant fetid water.

One of the soldiers was a militiaman, who died under the following circumstances:—his wife had come into Cardiff to see a relation who was dying of cholera; while at the bed-side she was taken in labour, and confined in the same room; the husband left his billet to visit her, remained in the infected room—in an hour or two he sickened, soon became collapsed, and died in eight hours. There was no death among the gentry or the professional classes.

*Deaths from Cholera at particular Ages.*

Under five years	..	...	...	...	25
Five and under ten years		...	...	...	6
Ten	..	twenty	...	...	13
Twenty	..	thirty	...	...	38
Thirty	..	forty	...	...	38
Forty	..	fifty	...	...	23
Fifty	..	sixty	...	...	14
Sixty	..	seventy	...	...	8
Seventy	..	eighty	...	..	6

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The above classification shows that the heaviest mortality falls at that period of life the most valuable and productive, when the individual contributes largely to the industry of the community; thus, between the ages of 20 and 50, two-thirds of the whole mortality from cholera occurred.

The means which I adopted, as Officer of Health, to meet the epidemic, may be divided into two portions—the preventative and the arrestive.

Of the medical treatment it is unnecessary in this report to allude to, as not being within your province, while the very nature of the disease renders it, of all others, least amenable to it, owing to this circumstance—in confirmed cholera the suddenness and severity of the shock completely prostrates the system, death taking place before the absorption of remedial agents can take place; it is therefore to the preventative and arrestive treatments that we must chiefly hope for success.

The preventative means adopted were—

A constant inspection of those districts which have been usually the seats of infectious disease, so as to obtain a removal of all causes capable of exciting disease ;

The employment of two policemen whose whole duty consisted in a constant supervision of the lodging-houses and dwellings of the poor ; to visit these night and day at irregular hours, so that their visits could not be anticipated, and to report to me the number of inmates in each house, its condition as to cleanliness, and other matters which presented themselves as worthy of notice upon such visitations ;

Frequent cleansing and improved ventilation, requiring sleeping-rooms to be untenanted during day-time, and the bed-clothes thrown back ;

Flushing of the surface drains in courts and alleys, and the gutters of streets ;

Endeavouring to inspire confidence in the advantages derivable from the employment of disinfecting agents, and thus allay undue panic ;

Abstinence from improper articles of diet.

The arrestive means consisted chiefly in the removal of the healthy from a house immediately that a case of cholera broke out in it, believing there is a constant exhalation of cholera virus, arising from the dejecta and persons of those suffering from the disease ; and as this increases in intensity, so those exposed to it are necessarily in greater danger of falling victims. The advantages derivable from this were immense, and to it I attribute a great saving of life, as after this was adopted it was rare for more than one case to occur in the same dwelling. In the early part of the epidemic I did not avail myself of this course, to the extent I did afterwards, from two circumstances — the difficulty of convincing the inmates of its advantages in the absence of proof, and an hesitation lest I might have spread the disease over other parts of the town ; I therefore need hardly mention that it was employed at first with considerable anxiety ; and whenever employed, I carefully watched whether disease was communicated to those with whom they came in contact ; but in no instance was there such result, while the advantages to those removed were immense, as among them no case of cholera occurred. I have therefore a right to assume a great saving of life was obtained by this plan. I have selected the two following out of many, as favourable instances of its benefits :—

In John-street I was called by the police to two fatal cases of cholera, at No. 5 : I immediately removed the remainder of the family to the House of Refuge. They all continued well ; but a few days after a fresh family took possession of the house ; the wife was seized with cholera in a few hours and died.

When summoned to Evans's court, at No. 3, there occurred, within 24 hours, three cases of cholera. There are three houses in this court ; I caused the whole of them to be closed, and the inmates removed ; they

all continued well; but two days after a man, unknown to me, went into No. 3, was shortly seized with cholera, and died.

I have thus, gentlemen, endeavoured to bring before your notice a short outline of the recent cholera invasion. I have endeavoured to render it as short and as concise as possible. I have necessarily omitted many means employed as being those generally used, and therefore not needing repetition. But I cannot conclude this report without thanking your Board for the great support and assistance I received at your hands. I could but feel the prompt and decisive manner you carried out every measure that I suggested as a mark of the confidence you placed in me.

In the discharge of the duties of my office, there could but occur times when I necessarily came into collision with the private and individual interests of some of my fellow-townsmen; whilst it then pained me to remember this, I could not, and I never did forget, that those duties were to be exercised for the saving of human life.

I have the honour to be, Gentlemen,

Your obedient servant,

H. J. PAINE,

CARDIFF, February.

OFFICER OF HEALTH.