Report of the Medical Officer of Health to the Vestry of Mile End Old Town.

REPORT

OF THE

MEDICAL OFFICER OF HEALTH

TO

THE VESTRY

OF

Mile End Old Town.

ANNUAL REPORT,

JUNE, 1858.

London:

PRINTED BY F. S. NEWELL, ASSEMBLY ROW, MILE END ROAD.

1858.

REPORT.

GENTLEMEN,

I shall employ but few words to introduce to you the present report. It is intended particularly to inform you of the sanitary state of the Hamlet during the past year,—to give you an account of the attempts made for improving its condition,—with some practical remarks on subjects of general interest.

The annual statement of the Medical Officer of Health should be made during the month of June, and should relate to events which occurred during the twelve months preceding the Lady-day immediately past,* making that period the termination of the year, as regards the sanitary state of the district reported on. But, as the tables and statements of the Registrar General are made up to the end of the year, that is to Christmas, some trifling inconvenience is found to arise from the want of relation.

I have therefore prepared the annual statements of mortality in accordance with the latter period, so that

* Metropolis Local Management Act, sec. 198.

comparison between our own and other districts may be facilitated to those who desire to institute it.

On account of the difficulty of obtaining with accuracy the numbers of the population of the different Wards, I have used the computation which was made for a similar purpose in 1856. The population has probably increased 5 per cent. in the last two years, so that correction to that extent must be applied to the Tables ($2\frac{1}{2}$ per cent. per annum).

But little change in the number of inhabitants can have taken place in the South or the West Wards, those Wards being built over and having attained something like their maximum of population. The vacant spaces of land in the North and East Wards are gradually being covered with houses; the Centre also, in a less degree. The bulk, if not indeed all of the additional population, must, therefore, be supposed to be distributed among the North, East, and Centre Wards.

As in every sanitary Report, the mortality returns form the most material portion, I shall at once offer them to your notice, only preceding them by a statement of the births.

TABLE I.

BIRTHS, 1857.

First Quarter	736
Second Quarter	635
Third Quarter.	646
Fourth Quarter	632
	2649
Deaths	1544
Excess of Births over Deaths.	1105

TABLE II.

Contains the population of the several Wards, the acreage, the deaths which have occurred in each Ward and in each quarter of the year, with the rate per annum to every 1000 persons living:—

WARDS.	Population as estimated in 1856.	Number of Persons to the Acre.	DEATHS, 1857.							Rate of Deaths per annum to every 1000 persons living.
			1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Total.			
							M.	F.	M.&F.	
North .	12188	75	78	67	79	60	152	132	284	23.3
East . .	7262	37	43	38	33	37	77	74	151	20.7
West. .	11712	150	96	71	98	70	155	180	335	29.4
Centre .	16775	124	89	75	97	109	174	196	370	22.
South .	13511	119	77	66	82	67	144	148	292	21.6
Workhouses	—	—	34	24	22	20	73	27	100	—
Hospitals	—	—	3	–	3	6	6	6	12	—
Totals .	61448		420	341	414	369	781	763	1544	
Mean rate for the Year.										23.4

In Mile End we lose by deaths 29.69, or nearly 30 persons weekly.

The rate for all London, for 1857, was 22.20.

For the Eastern Division, including Shoreditch, Bethnal Green, Whitechapel, St. George in the East, Stepney, Mile End, and Poplar, the rate was 24.35.

The rate for Mile End will be seen in the Table to be 23.4.

The mortality in the West Ward, which was the subject of remark in my last Report, still holds a prominent place, notwithstanding the attention which it has received, and the care bestowed upon it. It is clear that further efforts are required to improve its condition. Infant mortality is there greater than in the other Wards;—but, it has been observed that deaths among young children in increased proportion, is usually experienced as an influence of distress and want. Absolute want may not exist, but from the class and condition of a great portion of the inhabitants of the West Ward, there can be no doubt but that scanty means and distress are sufficiently abundant to account, in some measure at least, for the high mortality.

The drainage which has been effected in that part of the East Ward which so much required it, and where disease was so prevalent, will be seen by the Table to have been followed by an alteration in its relative position among the Wards as regards its mortality. A result so satisfactory needs no comment, and the works have been completed so recently, that further advantages may be fairly expected.

The proportion of Zymotic diseases to those of ordinary character, appears greater than in my last Report, and there is little variation in the different Wards. The difference is attributable to the prevalence of Diarrhœa for several months. In the workhouses, (for in the Table is included deaths which have taken place in that part of the City of London Workhouse which is in Mile End,) the rate is less, and is accounted for by the fact that, although Poorhouses are frequently hospitals for the sick, they are more frequently asylums for the aged, who are less liable to Zymotic influence.

TABLE III.

PROPORTION OF ZYMOTIC DISEASE.

WARDS.	Deaths from all Diseases.	Zymotic Diseases.	Or in the proportion of 1 to—
North . . .	284	66	4.3
East. . . .	151	34	4.4
West . . .	335	72	4.37
Centre . . .	370	83	4.4
South . . .	292	64	4.5
Workhouses .	100	13	7.69
Hospitals . .	12	—	—
Total . .	1544	332	

TABLE IV.

DEATHS AT PARTICULAR AGES, 1857.

AGES.	DEATHS.
Under 5 years	714
From 5 to 10 years	65
„ 10 „ 15 „	15
„ 15 „ 20 „	11
„ 20 „ 30 „	74
„ 30 „ 40 „	100
„ 40 „ 50 „	96
„ 50 „ 60 „	125
„ 60 „ 70 „	133
70 and upwards	211
Total	1544

The deaths of young children under 5 years of age will be here seen to amount to nearly half of the whole number of deaths.

TABLE V.

CAUSES OF DEATH, 1857.

DISEASES.	DEATHS.				
	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
Fever	10	10	12	19	51
Measles	2	5	13	20	40
Scarlatina and Cynanche Maligna	22	9	14	25	70
Diarrhœa	4	5	18	7	34
Dysentery	1	—	2	—	3
Hooping Cough	19	13	30	11	73
Croup	8	10	7	1	26
Erysipelas	3	4	2	1	10
Pulmonary Consumption	50	45	34	37	166
Inflammation of the Lungs	82	28	18	40	168
Diarrhœa, Bronchitis, and Pneumonia, of Children under 3 years	33	36	65	47	181
Water on the Brain, and Convulsions of Infants	29	34	34	24	121
Dropsy	9	4	2	8	23
Cancer	2	2	—	2	6
Hernia	1	—	—	—	1
Diseases of the Heart and large Bloodvessels	11	10	14	7	42
Apoplexy, Paralysis, and Diseases of the Brain	7	20	22	20	69
Puerperal Fever	1	—	1	—	2
Premature Birth, and Debility from Birth	22	17	22	16	77
Violence, Privation, and Poison	12	8	15	2	37
Natural Decay	38	45	28	30	141
Other Diseases, chiefly Chronic*	54	36	61	52	203
Total	420	341	414	369	1544

* In the line for "Other Diseases, chiefly Chronic," are included two cases which were too equivocal to be placed under their usual names. One was a case of *Varicella*, registered as Small Pox; and the other a case of Cholera, too doubtful to be here registered as such.

Measles and Scarlatina have both been long prevalent, though not so severe in their type as to make a corresponding appearance in the preceding Table. Diarrhœa has caused more deaths than any other disease. It is remarkable that Pulmonary Consumption has been less fatal, while Inflammations of the respiratory organs have destroyed a large number.

To continue the returns to Lady-day, in accordance with the clause in the statute before mentioned, I have added the Quarterly Summary for the first quarter of the present year.

QUARTERLY SUMMARY OF THE MORTALITY RETURNS FOR THE QUARTER ENDING MARCH 27, 1858.

Births	701
Deaths	435
Excess of Births	266

Of the deaths, 202 were males, and 233 females.

DEATHS IN WARDS.

North.	East.	West.	Centre.	South.	Workhouses.	Hospitals.*
76	35	112	84	86	41	1

The Weekly Average of Deaths was, in 1858,		(1857)
January . .	35.2	(33.)
February . .	30.25	(32.)
March . .	34.25	(31.75)

The weekly average of the first quarter of the present year is actually higher than that of the first quarter of last year; but

* The Hospitals are the two Jews' Hospitals, which are more properly Asylums for aged persons.

if the population be raised according to the estimated increase, it will appear different, and the number of deaths proportionately smaller.

One death from Small Pox was registered,—the first which has occurred for upwards of two years.

The first case of death from Diphtheria was recorded as having taken place at 13, New Nelson Street, on March 2nd.

PAVEMENT AND DRAINAGE.—SURVEYOR'S AND INSPECTOR'S REPORTS.

Paved footpaths contribute towards sanitary purification in two ways;—by preventing the soil about dwellings being saturated with organic refuse, which during rains is washed away into the sewer instead of being allowed to soak into the subsoil; and by making the basements and foundations of houses drier, and consequently more healthy and wholesome. To effect the latter object, in every case the pavement should be continued up to the houses themselves, or it becomes to some an extent an evil; for if rain charged with refuse matter, always abundant on the surface of the ground in towns, be allowed to enter the soil, the entry of the rainfall should also be permitted, to effect the salutary solutions and chemical changes which eventually lead to the purification of the soil, and the conversion of that which entered the ground as refuse, into useful, and at the same time harmless constituents.

Our paving as well as drainage has been considerably extended in the last year; 68,404 feet of new paving, and 39,510 feet of old, has been laid, besides 19,937 feet of kerb. Our drainage has been extended to the amount of little short of a mile and a quarter in length; 2588 feet of brick sewer have been constructed, and pipe sewers to the

extent of 3281 feet. This, with the placing of 81 fresh gullies, will show that the paving and drainage of the Hamlet at least has received due attention. The streets which have the advantage of new sewers are those which have really stood most in need of them,—they are

Devonshire Street, East.	Brick Sewer.
East Street	Brick Sewer.
Albert Street.	Pipe Sewer.
Albert Road.	Pipe Sewer.
York Place	Brick Sewer.
St. Dunstan's Road	Brick Sewer.
St. Ann's Road	Pipe Sewer.
Park Road	Brick Sewer.
St. Thomas's Road	Pipe Sewer.
Alfred Street.	Pipe Sewer.

The following is the report furnished to me by the Inspector of Nuisances of work done by him from the date named in my last report to March 25th, 1858, dust removals not being included.

INSPECTOR'S RETURN FOR THE YEAR ENDING MARCH 25, 1858.

Privies emptied	220
Drains cleansed	221
Privies and Drains connected with Sewer, Panned and Trapped	265
Cesspools emptied	20
Removals of Swine	11
Removals of accumulations of offensive matter	19
Houses cleansed and purified	26
Sundries	11
	801

GAS SUPPLY.

The gas, which is largely consumed in the Hamlet, both in public and private, is not open to more objection than

that used in other parts of the Metropolis, or the country in general; in certain particulars, perhaps, it may be even less objectionable. In fact the disadvantages of which we have to complain belong to the use of the material generally, rather than to the particular production which we burn. From the leakage of the gas from the pipes laid in the ground, and the consequent impregnation of the sub-soil, the walls of houses, the sewers, and other parts and places to which, when escaped from the pipes, the gas has access, I believe a considerable, but indefinite amount of injury to arise. One source of satisfaction, however, is that the evil is not likely to be subject to increase; the interests of both producers and consumers being engaged to preserve that which is of value within its proper place. The engineering talent which the various gas companies justly prize and avail themselves of, is, and will be, I have no doubt, extensively employed to reduce the amount of leakage to its lowest possible limits.

The expediency of legislative interference with the manufacture and supply of gas is now under the consideration of the House of Commons, and it is to be hoped that the commercial part of the question will not be allowed to eclipse the hygienic portion. Competition between rival companies would of course extend the ramification of mains, and increase the amount of unavoidable leakage. Escape from mains might be lessened by an improvement in the quality of gas; for less pressure would be required to maintain a sufficient flame, and, next to haste in making the joints in the pipes when laid down, that is, I apprehend, the principal cause of leakage. Further than that, with the illuminating power of the gas we use, so long as the want of that power is not dependent on impurity calculated to affect health, I have

not to interfere, that being a matter between the producer and consumer; but with regard to its content of that which during combustion may interfere with the public health, I am able to state that it is well purified, and may be used without injury in well-ventilated apartments.

WATER SUPPLY.

The choice of the water which we drink ought to be regarded as a matter of the greatest moment. Not only may indefinite, but long-continued indisposition depend on the use of impure water, but some of the most alarming and fatal endemic diseases have been undeniably proved to have been occasioned by its consumption. The water in general use in Mile End Old Town is that supplied by the East London Water Works Company. In my first annual report I described the source from whence the Company derived their supply ; I wish now to remark on three conditions of that water, viz. :—its hardness, and the amount of organic and inorganic matter it contains.

The hardness of water is represented by a scale, indicating degrees of hardness, as well as the real quantity of the principal hardening agent,—carbonate of lime; thus, the East London Water is of about 14 degrees of hardness, and contains 14 grains of Carbonate of Lime—too much for economical use, except as a beverage.

The amount of organic impurity in water is more important; to this condition is its unfitness commonly owing, here, at least for consumption. The Thames water contains at all times a large quantity,—more, of course, during certain seasons; that of the River Lea, which supplies the East London Water Works, contains 18.30 grains to the gallon of

total impurity, and nearly 2 degrees or grains to the gallon of organic matter.*

Organic impurity consists of vegetable and animal matter, either living and proper to the water, or dead and almost entirely introduced in its course, such as sewage matter, refuse, &c. The amount varies, of course, being much increased by heavy rains, &c. The amount of organic impurity contained in the Thames water is so great, that in the tanks or butts of the vessels which contain it for the supply of the crews during their voyage, it undergoes a fermenting process—during which the organic matter is got rid of,

* The figures here represent something like a maximum. In the analysis by Dr. D. Thomson, of the water supplied by the London Companies, published in the Registrar-General's weekly returns for the last week, the amount is shown to be less;—as it may be useful, I append the extract from the report.

COMPOSITION OF THE WATER SUPPLIED BY EIGHT OF THE METROPOLITAN WATER COMPANIES, IN MAY, 1858.

The amount of impurity is expressed in degrees, each degree being equivalent to 1 grain of foreign matter present per gallon. The analyses were made by Dr. Thomson, F.R.S., of St. Thomas's Hospital.

Companies.	Total Impurity. grs. or °	Organic Impurity. grs. or °
Distilled water . . .	0.0	—
Kent	25.36	2.40
New River	17.16	1.80
Grand Junction	17.08	1.80
Southwark	16.84	1.76
Chelsea	18.20	1.68
Lambeth	18.48	1.60
East London	15.92	1.48
West Middlesex	16.36	1.12

All the samples were taken from the mains, with the exception of the Lambeth specimen, which was procured from a service-pipe at Champion-hill. The present table, when compared with that for the preceding month, exhibits a greater equality in the composition of the waters generally, in consequence of the absence of rain, which has a tendency to augment the impurity.

together with gases it holds in solution, and inorganic matter which is suspended in it. After it has undergone this change it is much preferred, from its purity and non-liability to further change. During the process it is not only unfit, but dangerous to use.*

Inorganic matters owe their presence in water to the banks of the natural basin which contained it, or to the channel or bed of the river through or over which it flows, and will, of course, vary according to the nature and composition of the geological formation.

What we deem desirable in water supply may be very briefly expressed, viz.:—1st, abundance, 2nd, purity.

But supposing the two conditions to be so far in opposition that under ordinary circumstances water cannot be supplied in unlimited quantity, and of a quality fitted for drinking and domestic use, as, for instance, it is, when subjected to the process introduced at Plumstead by Dr. Clark, of Aberdeen, and which consists in at once softening and purifying water by precipitating the chalk and organic

* I wish to confine my remarks to the water which is consumed for drinking especially, in our own district, and to make only such general observations as are pertinent to the preservation of the health of that portion of the public over which it is my duty to watch. With regard to the Thames water, and its purification by fermentation or decomposition, the improvement which is the result of the process, appears, on the authority of the "*Annuaire des eaux de France*," to be an exception to the rule. "Except in rare instances, waters which hold in solution a remarkable proportion of organic matters, putrefy quickly, and acquire hurtful properties. It is very evident that diarrhœa, dysentery, and other acute and chronic maladies, have been endemically determined by the continued use of pond, marsh, or well water, holding too great proportions of changed organic matters either in suspension or solution. It is admitted, then, as a result of general observation, that, all conditions being equal, the less water, for drinking, contains of organic matter, the better it is."—*Annuaire des eaux de France.*

matter by the mixture of an additional quantity of lime. If such a supply be impracticable, what is to prevent our being supplied from two sources, one abundant and cheap, from having undergone no artificial purification, and the other filtered and deprived of its hardened constituents? If the objection be that of expense, it is not valid, for the balance of cost would be much in favour of the consumer, by setting off the sum economized, which would certainly attend the consumption of the purified and softened water. Washing would be cheaper and better performed,—our boiled food would be more easily cooked in a superior manner,—more money could be spared for tea and coffee from the poor man's pittance; and by discountenancing and preventing the use of other water for potable purposes, we should avail ourselves of a potent force to oppose disease and maintain health. Of this there can be no possible doubt; to estimate the extent of the boon we have only to imagine the advantage which would accrue to an individual or to a single family as one of the units of which the public is composed.

SURFACE WELLS.

The water obtained from surface wells in a populous neighbourhood should not, on any account, be drunk. The nearer such wells are to the surface, the more unfit are they for such a purpose; the deeper, the less is the probability of the water being hurtful, but it is safer to avoid them altogether. By the aid of the microscope, portions of unchanged animal and other organic matter may be, and have frequently been, discovered in such well water; and the offensive addition could only be present through some

offensive addition could only be present through some unknown, and perhaps small, communication with an adjacent cesspool; and, which is more worthy of observation, a most destructive disease, no other than Cholera, has followed the irruption and contamination of a well, the water of which was so palatable that it was sent for by the ordinary carrier, for the daily use of certain individuals, residing at a distance from the spot. Unhappily, in that case four persons who partook of it were attacked, and two fell victims to the disease.*

For aliment it is far better, therefore, to use water from our ordinary supply; the amount of impurity in it is small, perhaps too small to be hurtful, and it may be always estimated. During the prevalence of epidemic disease, particularly of any kind affecting the bowels, the probability of individual attack may be much diminished by drinking only water which has been filtered, then boiled and suffered to become cold.

THE RIVER THAMES.

As our great commercial highway, the Thames, has been mentioned in these few remarks upon water, I am led to the

* "A gentleman who, with his two brothers, is brought daily by his business into Broad Street (Westminster), informs me that his mother, who resided at Hampstead, being very partial to this particular water, was in the habit of drinking it daily, having it fetched in a bottle by a cart that went every day from Broad Street to Hampstead. She was seized with Cholera on Friday, (September 1st, 1854,) and died the next day. A lady staying with her at the time also drank of it and died. A servant drank the water and had a slight attack of diarrhœa.

"He further informed me that one of his brothers who was in the habit of drinking this water, suffered from diarrhœa, whilst he himself and his other brother did not drink it, and were not ill."—*Report on the Cholera outbreak in the Parish of St. James, Westminster, during the Autumn of* 1854.

observation that the much-desired purification of the river has occupied much of public attention. It was the generally prevailing opinion, when the subject was first seriously examined, that the waters of the Thames, polluted as they are by the sewage of a population of upwards of three millions, disengaged from its surface noxious gaseous matter mixed with the peculiar miasmatic principles, from which originate the most destructive diseases, and that to such admixture with the atmosphere the supposed prevalence of epidemic disease on its banks was due. I say *supposed*, because it has been questioned whether disease be more prevalent at or near the shores of the river, than in remoter places, other circumstances being equal.

Within the last twelvemonths a change has taken place in the state of opinion of scientific men,—a change more apparent, however, than real. At first the mischief-producing power was freely imputed to the river; now, it is not the river which is in fault, but the mud, which, being left bare and exposed for some hours during the tidal period, causes, in hot weather particularly, an offensive stench. All the change that I can understand is, that, instead of attributing the mischief to the whole, the particular offending part has been discovered. My own opinion is, that the water of the river is not exonerated,—that it contains in suspension that which forms, when deposited, the offensive mud; and that the suspended matter is washed into the river from the sewers principally, but besides that, from the extensive use of the river as a receiver of filth from the almost numberless vessels navigating it.

This very moderate correction of opinion, being a refinement rather than a correction, is likely to have material influence over our expenditure. Two distinct objects have

to be attained in effecting the dispollution of the Thames; 1st, to prevent further introduction of filth, and 2nd, to prevent the exposure of the mud at, and a little before and after, low water. The first, as is well known, it is proposed to effect by carrying the sewers to such a distance from the Metropolis, that the return of the sewage by the tide would be impossible; and the other, by narrowing and deepening the channel of the river by means of built embankments, so that the tide would be more rapid and efficacious in cleansing by its down scour, and allow no surface of mud to be left exposed. By some it is believed that the latter step alone would be sufficient, and that it would, if done effectually, supersede the necessity of resorting to the first enormously expensive plan of draining.

It has also been proposed to adopt the most unequivocally successful part of the Leicester system of drainage, rejecting that portion of it which professes to make the sewage matter into manure, to be sold at a profit, and retaining that which relates only to the purifying of the sewage, abstracting from it all its solid and some other of its constituents, and then allowing it to flow in a harmless form into the river. Lime is there freely used,—it is now used in our sewers, at a cost of 150*l.* per diem, and although in all probability useful, it is not used with any certainty or precision of application. If the consumption of lime were to be continued at its present rate, the annual expenditure would be 53,750*l.*; while the interest of seven millions, which the extended main drainage would at least cost, amounts to 350,000*l.* If, in London, the sewage could be deodorized and filtered, and then returned to the river in a purified state, a most important problem would be solved, and the river further purified by adapting the same plan to other cities and towns situated on its banks.

ABATEMENT OF SPECIAL NUISANCES.

As I stated to you in my first Report, we are happily in a great measure free from liability to interruption of health from a cause which, in some parts of London, is a great source of anxiety and conflict between the desire to preserve the public health, and to avoid interference with industrial occupation. With but very few exceptions, I have met with the utmost readiness on the part of the proprietors of manufacturing establishments, to adopt any course which could be shown to have the positive effect of rendering their occupation less offensive to their neighbours. Considerable expense has by some been incurred, and that it has not been wasted, I have only to call your attention to the improved condition, in a sanitary sense, of the premises of Messrs. SPILL, on Stepney Green, and Mr. WALMSLEY, in the New Road.

A matter of greater import has, however, engaged my attention, and as the subject has only been fully laid before the Committee for Drainage, Nuisances, &c., I will endeavour to explain to the Vestry the nature of the nuisance, my views respecting it, and the steps which have been taken for suppression or obviation.

Shortly after I undertook the duties of my office, two years and a half ago, my attention was directed to a nuisance, said to originate at, and proceed from, the Tower Hamlets' Cemetery. In my First Annual Report, page 12, I drew the attention of the Vestry to the subject, and informed them that the nuisance was abated considerably by pumping from a drain which had not, at that time, become contaminated. But I cannot more clearly state the case than by

introducing the reports made to the Committee for Drainage, &c., on the subject.

REPORT No. 4, DATED MARCH 27, 1856.

In consequence of a complaint made and signed by thirteen individuals, of being annoyed and injured by an excessively offensive stench, proceeding from premises connected with, and belonging to, the Tower Hamlets' Cemetery, I visited the spot on the 22nd instant.

In a shed was a steam engine, employed in working two lift pumps for the purpose of raising the contents of a well or shaft, 30 feet deep, to an overflow tank, a little above the level of the adjacent sewer, with which the tank was connected by a drain.

The fluid raised by the pumps was the evident cause of the pollution of the atmosphere, and it was equally clear that the source of such pollution was not to be attributed to the natural drainage of the Cemetery itself.

When the land of the Cemetery was being prepared for the purpose of interment, it was drained to the depth of about 20 feet. The drains which were then constructed, poured their contents into a large underground reservoir, which was relieved by flowing over into an Artesian well, constructed for that purpose. The Artesian well having been rendered useless through obstruction, the shaft, (the subject of the present complaint,) was sunk, and pumps used to raise the drainage into the sewer. After using the pumps some time, the fluid thrown up by them, instead of being tolerably clear, became slate-coloured, muddy, of a very offensive smell, and much larger in quantity. On opening the drains, this offensive fluid was found to enter the drain directly, and at a particular spot, where it rushed in with violence, and continues to do so at the present time.

In the immediate neighbourhood is a pond belonging to the Great Central Gas Company, into which refuse has been thrown in abundance. That pond has been rapidly sinking since the steam engine in the Tower Hamlets' Cemetery has been used, and in all probability it will soon be exhausted, when the large drain in the Cemetery will admit of repair. In consequence of a remonstrance from the Vestry of the Poplar district, I am informed that the persons employed at the Great Central Gas Company's Works will not be permitted to continue to throw the refuse into the pond where it has usually been thrown, that they will consume it instead by evaporation in pans placed under their retorts, while the furnaces used in heating the retorts will consume the gases which will be given off.

I think it fairly conclusive that the liquor in the pond, having found its way through a rent in the soil, has burst into the drain in the Tower Hamlets' Cemetery, and the process of pumping, which has produced the effluvium

complained of, must continue till the drain is sufficiently emptied by the process to admit of repair. The Great Central Gas Company having undertaken to consume their refuse, such a course will facilitate the process, and tend to abate the Nuisance.

EXTRACT FROM REPORT No. 7, DATED MAY 15, 1858.

I have received further complaints of the injury occasioned to health and property by the exhalation from the drainage of the Tower Hamlets' Cemetery. I have well considered the subject since I last communicated with you upon it, and am convinced that the views I then expressed were correct. The case would be met by the Great Central Gas Company ceasing to employ wet lime for purifying. The soil, for some distance around the premises of the Great Central Gas Company, is so impregnated with the fluid charged with sulphuretted hydrogen, that a cessation of pumping the fluid at the Tower Hamlets' Cemetery would only in part correct the evil, while, without constant drainage, the Cemetery would be useless for purposes of interment.

The subject was again brought before the Committee, in consequence of the serious complaint contained in the next Report.

EXTRACT FROM REPORT No. 20, DATED JULY 7, 1857.

On the 25th of June I received a request from Mrs. Soanes, of Bow Common Lane, to examine a well upon her premises, which was represented to have become recently useless, in consequence of the impregnation of the water contained in it with "gas liquor," or "gas itself." Some valuable fowls had drunk, as usual, of the water, and had died. I examined the well and the water contained in it, and found the water strongly flavored with that which I believe to be hydro-sulphuret of lime, or blue billy,—not gas, such as is supplied in pipes, but that which is an impurity in illuminating gas, and removed from it with considerable pains. I addressed a letter to the Secretary of the Great Central Gas Consumers' Company, believing the pollution of the well to be derived from their works, inviting him to send down a competent person to examine the matter conjointly with myself; and I have received an answer, that he intends to call upon me, requesting me to make an appointment.

REPORT No. 25, DATED JULY 21, 1857.

At the last meeting of this Committee I informed you that the Secretary of the Great Central Gas Consumers' Company would call on me to confer with me respecting the alleged pollution of the well in Mrs. Soanes's yard, Bow Common Lane. He accordingly did so on Thursday, July 9th. He rather feebly denied that the well was injured by any process or act of the Company's servants, or by anything which took place within the premises of the Company. He produced, in confirmation of his denial, a certificate affirming the absence, stated to be nearly complete, of sulphuretted hydrogen in the water of the well in the Company's premises,—wishing me to infer that if the well on the Company's premises was not injured, another well nearly a quarter of a mile distant, if injured, was not injured by anything which took place within their precincts. It appeared, however, that the two wells were of a totally different character, one being a surface well, and the other Artesian, so deriving the supply of water from different sources. The surface well at Mrs. Soanes's is twelve or fourteen feet deep, and the other upwards of two hundred; the one is fed by the percolation of rain-fall through the superficial soil and gravel,—the other, after passing through about two hundred feet of clay, is supplied by the water in the chalk basin.

The tanks for holding wet lime charged with impurities, which I believe to be the cause of this injury to Mrs. Soanes's well, and also of other various nuisances, the Secretary assured me, were in the act of being annihilated, their place to be taken by water and fluid-proof tanks, strongly built in brick and cement, and that the new ones were being constructed as fast as bricks and cement could be put together, and that he hoped, as far as the public question was concerned, that assurance would be satisfactory.

I wish this Committee to observe that the Great Central Gas Company's Works and those of the Commercial Gas Company, are about equally distant from Mrs. Soanes's well; and that the reason why I attach the commission of the injury to the Great Central, and not to the Commercial Company, is, that at the latter establishment the material is not used which contains the chemical compound which has spoilt the water in Mrs. Soanes well. At the Commercial Company's Works it is wholly dispensed with, and superseded by a better but more expensive process of purifying, while in the Great Central wet lime is freely employed.

The abatement of the offensive effluvium did not meet our expectations. The fluid pumped up from the Cemetery was somewhat less loathsome, but still remained a cause of

frequently-repeated complaint. The sewer into which the fluid was introduced was occasionally so offensive throughout its course, that disease was supposed to be often occasioned by it. The Poplar Board of Works caused the engineer to be summoned before the Police Magistrate, who did not inflict a fine, but directed improvements and alterations to be made, similar to those which the engineer had so frequently before promised to execute, and also awarded to the complainants costs amounting to ten guineas. But as the stench still remained,—perhaps not generally so intense, but occasionally as bad as ever,—the Poplar Board of Works invited the consultation and co-operation of the Mile End Vestry, and the Limehouse Board of Works, to put an end decisively to the long-continued nuisance. The letter of the Poplar Board of Works was put into my hands, and I made the following Report to the Committee.

REPORT No. 37, DATED MARCH 30, 1858.

The subject of the nuisance said to be produced by the introduction of matter unusually and especially offensive, to the Lime-kiln Dock sewer, has been frequently noticed, and several times reported on. It is again brought under the notice of the Vestry of this Hamlet, by a letter received from the Clerk to the Board of Works for the Poplar district, inviting the Vestry to co-operate in investigating and suppressing the nuisance.

I must remind the Committee that the boundary line of this Hamlet near its South-eastern angle, traverses the premises of the Great Central Gas Company.

Adjoining the premises of the Great Central Gas Company is the Tower Hamlets' Cemetery.

The level of the Tower Hamlets' Cemetery is so low that it is obliged to be drained at the depth of 18 or 20 feet; and as that is 11 feet below the level of the Sewer which skirts the premises, pumping is necessarily resorted to to keep the ground of the Cemetery sufficiently free from water to permit the interment of the dead. After the pumping had been continued at the Cemetery for a few months, the fluid thrown up by the pumps, instead of

being tolerably clear and quite inoffensive, became turbid, slate coloured, very offensive to the sense of smell, and much increased in quantity. This change was supposed by many passengers and others who, living near the spot, were particularly and seriously annoyed, to proceed from the decomposition of the dead, the number of burials having been notably increased at or about the time of the outbreak of the Cholera in Broad Street, Westminster. The unsatisfactory change was however shown to be derived from a different source. The fluid pumped up in the Cemetery did not contain the salts which result from the decomposition of the human body in the earth, nor was the effluvium at all such as would be occasioned by any such cause. It was proved to be identical with the refuse liquor known in Gas Works by the name of *blue billy*, which is water containing some of the most offensive impurities of coal gas, and highly charged with hydrosulphuret of lime. It was further discovered that the drain at the Tower Hamlets' Cemetery was entered by the offensive fluid at a particular spot, and in such quantity as to lead to the conclusion that it had not merely percolated the gravel, but that it had found its way more directly and rapidly through a reft in the soil. Many expedients were used by the persons employed in charge of the Tower Hamlets' Cemetery to obviate the difficulty and the nuisance, all of which were partly useful, but were so only for a short time. Promises were made by the engineer of the Great Central Gas Works and others there in authority, that no more of their waste water or gas washings should be permitted to enter the soil, and that it should instead be burnt in pans beneath the furnaces used in heating the retorts, —none of which promises were kept.

Complaints have been made informally, but in great number, of the offensive character of the exhalations which proceed from the ventilating eyes of the Lime-kiln Dock sewer, throughout that part of its course which extends from the Regent's Canal to the exit of the sewer at Limehouse. Meat is said to become rapidly tainted, silver blackened, white paint converted to a dull lead colour, with many other injurious effects upon property in the direct course of the sewer, from which effects the houses in the streets but little removed, are exempt. Sickness, too, has been attributed, and in all probability, correctly, to the same cause. Mr. Moon, an optician and instrument maker, whose house is situated exactly on the outlet of the sewer in Lime-kiln Dock, makes the strongest complaints of injury to health and property, and it is likely that he is the greatest sufferer; his valuable metal goods are clearly damaged by the proximity of the sewer; but how much of the damage arises from oxydation, promoted by the inevitable dampness of the spot he has selected for his business, and how much from the chemical action of gases evolved from the sewer, it would not be very easy to determine.

If all the refuse water which is supposed to give rise to the offensiveness

of the Lime-kiln Dock sewer were excluded, I think there would be much left in the simple position of Mr. Moon's house in relation to the dock, the river, and the outlet of the sewer, to expose his family to sickness and annoyance, and his goods to injury.

It must be observed that the part of the Lime-kiln Dock sewer in question contains very little soil, it does not pass through a very populous district, and that at Bull Lane is a gate which cuts off communication with the general system of drainage from that point.

Thus it will be seen that the nuisance originated in one district, is dispersed or extended in a second, to the great annoyance of a third.

The inhabitants of the Limehouse district, or that portion of them who reside near the course of the sewer, suffer to the greatest extent, and are the most numerous of the complainants. The sewer is directly contaminated by the pumping in the Tower Hamlets' Cemetery, and the soil is rendered offensive by the improper exposure of wet lime, blue billy, and other refuse, upon the land within the enclosure of the Great Central Gas Company's premises.

It does not appear at all clear that the Great Central Gas Company and the Tower Hamlets' Cemetery are the sole offenders. The Sewer goes through the part of Bow Common where the greater number of the offensive trades of that place are carried on, and they may all or many of them contribute, according to the nature of their manufacture somewhat, towards the nuisance.

I have endeavoured thus to put the Committee in possession of as much information as I could obtain on the subject. It appears to me that the matter would be best dealt with by a conference with a deputation of Vestrymen, or Members of the District Board, from each of the other interested Districts.

I am quite unable to suggest any remedy for abatement of the Nuisance, as it exists in our Hamlet, short of requiring the Tower Hamlets' Cemetery Company to desist from pumping, but if compelled to do so they could no longer continue their interments.

To revert particularly to the Letter of the Poplar Board of Works. The examination of the sewer in our Hamlet has been made by your Surveyor, and the feeling of the Vestry on the subject will doubtless be ascertained upon the presentation of the Report from this Committee.

A deputation from the Limehouse and Poplar Board of Works was accordingly invited to meet the Committee, to whom the matter was, in the usual course of business, referred. The Medical Officers of the three Districts were subsequently

requested to consult and make a joint Report at the next meeting of the Deputation and Committee. A careful investigation was instituted, not on the spot merely, but throughout the whole course of the sewer from which emanated so frequently the peculiar and offensive odour: samples were taken, at intervals, of the fluid contained in the sewer, and subjected to chemical test, particularly for sulphuretted hydrogen. The result of the examination is contained in the following Report.

BOARD OF WORKS FOR THE POPLAR DISTRICT,
Bromley St. Leonard, May 6, 1858.

GENTLEMEN,

We, the undersigned, having examined at two separate periods, samples of water taken from the Tower Hamlets' Cemetery, and five others taken from various parts of the sewer, find abundant evidence of sulphuretted hydrogen in the well water, and also, in a very diminished degree, in the sample taken at the Moor's Arms, about 320 yards from the Cemetery, after which all trace of it lost.

We are therefore unable to account for the evolution of the sulphuretted hydrogen at the spots complained of, except on the assumption that *gas water** is surreptitiously pumped into the sewer at night by the Great Central Gas Company,—a supposition rendered extremely probable by the fact that four inlets to the sewer within the Company's premises have been detected by the Clerk of the Works to the Poplar District.

We have the honor to be, Gentlemen, your obedient servants,

THOMAS ANSELL, M.D.,
Medical Officer of Health for Bow and Bromley.
SAMUEL K. ELLISON,
Medical Officer of Health for Poplar.
ALLAN CLELAND,
Medical Officer of Health for Limehouse.
J. H. FREEMAN,
Medical Officer of Health for Mile End Old Town.

* By gas water we mean that which is technically termed *blue billy* water, which is more concentrated and stronger than when it has percolated through the surrounding soil.

It was found that the pump well at the Tower Hamlets' Cemetery was highly charged with sulphur. Beyond the place from which the next sample was taken, 325 yards from the well at the Tower Hamlets' Cemetery, no trace was discovered, and the fluid contained in the sewer had become deprived of its peculiar offensiveness, either by agitation in its course or by forming new compounds within the sewer. The experiments were made three several times, on fluid taken on three different days from the sewer, and with similar results,—on the first occasion while the pump at the Tower Hamlets' Cemetery was at work; the second after the pumping had, by arrangement, ceased 48 hours; and the last without giving any one intimation of our intention to subject the fluid to examination.

The places from which the samples were procured were, the Tower Hamlets' Cemetery, the Moor's Arms, (2 places,) North Street, (2 places,) King Street, and the outlet of the sewer where it enters the Thames. At a subsequent visit to the Great Central Gas Consumers' Company's Works, it was found that the pits which had been the persisting cause of the nuisance were filled up, and that the fluid which was so nauseous was being utilized by the engineer in making sulphate of ammonia. If this filthy stuff can be turned to profitable use, we shall have very few, if any, complaints of its having been got rid of by pumping it into the sewer; and the last examination has put those whose duty it is to watch over such matters, in a position to distinguish the offenders, should any further complaints reach them.

Thus, the conclusion of the matter has proved as satisfactory as possible; no better position could have been secured after the best contested trial at the Sessions, and we may congratulate ourselves on its having been achieved without cost to ourselves, and very little to our opponents.

CONCLUSION.

The result of our last year's endeavours will be seen by reverting to the subjects treated of in this Report. 1st, in an increased population, the number of births having been superior to the number of deaths, and continuing so, producing further present increase; 2nd, in a reduction of the death rate to a number which, if established as the average, will every year prolong the life of four persons in every thousand to little less than twenty years; 3rd, drainings and cleansings have been extensive; 4th, Special nuisances of magnitude and importance have been efficiently obviated or suppressed.

The remarks on gas and water have been introduced principally to show that one may be used with impunity, and and that in the event of severe Diarrhœa or diseases of that nature becoming endemic, well water may be scrupulously avoided, and judgment used in selecting the beverage from other sources.

Until I compared our rate of mortality with that of other Metropolitan Districts, I believed it to be rather more favorable to us than it really is. The comparison has convinced me that something further should be done to make use of our natural advantages, to prevent those advantages from slipping from our hands, and losing an amount of salubrity quite within our grasp. This, to shorten space as much as possible, leads one to reflection on the prominent cause of our too high, although reduced, mortality. From the preceding observations in this report it will be clear that trade nuisances do not constitute the cause, and I am constrained to look for it in everywhere pervading defects

in dwellings,—defects which affect most that class who have nothing but toil for an inheritance, who have few means of counteracting noxious influences arising in their houses by good living, and by invigorating their health so as to enable them to resist morbid influences of impure air, by occasional change of scene.

Familiarity with filth degrades the individual; so also in a degree scarcely inferior to it, does the breathing a tainted atmosphere; and wherever foul air and dirty dwellings are found, there also is constant, an agent perhaps more directly destructive than either, to both moral and physical human nature,—drunkenness. Although the disorderly management of a home is frequently, and with reason, considered a consequence of intemperance in inebriating drinks, yet it is equally certain that the vicious habit is often acquired by the apparent necessity for stimulants caused by the debility and lassitude which is produced on the system by breathing an atmosphere constantly charged with impurities. There can be no doubt but that these are the most evident as well as the most productive causes of disease; and while visible nuisances, and those recognised by smell, have received much attention from all who are engaged in the laudable work of improving the public health, it is not a little surprising that so fruitful a source of impurity as is found in the imperfect ventilation of small dwellings, should be either deemed unimportant, or have received insufficient attention, particularly when the means of correction are, in most instances simple, practicable, and inexpensive. To diminish mortality to its fullest extent, it is not sufficient to stop the ravages of pestilental disease, by cleansing, lime washing, and other modes for purification. Common humanity could not be satisfied with less; but we have a

stronger beneficial force at our command, a power of raising the state of health of that portion of the public, which, habitually reckless, neither knows how nor cares for protecting itself from liability to disease. That power is the authority conferred on the Local Board, to remedy sanitary defects in habitations.

The true treatment of epidemic and endemic disease is by thorough sanitary improvement. Medical science is but feeble to cure such disease, though powerful to prevent. If it cannot by the administration of medicaments put an end to diseases like Typhus Fever, it can render the place of their existence less conformable to their encouragement and development,—it can remove causes which nourish and propagate the scourge,—and if it be impossible absolutely to extinguish it, its mode of existence may be reduced from one eminently destructive of human life, to that of an ordinary transient ailment. In what state would the inmates of our large public establishments be in the absence of the most careful and severe sanitary regulation? Regret has not been unfrequent for the consequences of either mismanagement or neglect of the prime and essential conditions for preserving a congregated body of individuals in fair and proper health. If careful vigilance be found so useful in large establishments, and the consequences of neglect so quickly evident and disastrous as we know them to be, it is clear that, to descend from the greater to the less, similar care in house improvement would be followed by the desired permanent reduction of the rate of mortality. We should interrupt the current existence of formidable and to a certain extent intractable diseases, and raise the state of general and habitual health to such a moderate standard of vigour, that it could oppose successfully the morbid

impressions which are costly to the public, and so frequently fatal to the individual.

I have the honor to be,

GENTLEMEN,

Your most obedient servant,

J. H. FREEMAN.

Medical Officer of Health for Mile End Old Town.

TOWN HOUSE,

June 23, 1858.

NEWELL, PRINTER, ASSEMBLY ROW, MILE END ROAD.