

# SUPPLEMENT TO THE WEEKLY RETURN.

## STATE OF THE LONDON WATER SUPPLY.

### MORTALITY FROM CHOLERA IN DISTRICTS SUPPLIED BY WATER COMPANIES.

Water Companies.	Sources of Supply.	Aggregate of Districts supplied chiefly by the respective Water Companies.			Deaths to 100,000 Inhabitants.
		Elevation in feet above Trinity High-water Mark.	Population.	Deaths from Cholera in 14 Weeks ending Nov. 26.	
LONDON	- - - -	39	2362236	744	32
* (1) Hampstead and (2) New River.	Springs at Hampstead and Kenwood, two artesian wells, and New River.	80	166956	8	5
New River	At Chadwell Springs in Hertfordshire, from river Lee, and four wells in Middlesex and Herts.	76	634468	56	9
Grand Junction	The Thames, 360 yards above Kew Bridge.	38	109636	16	15
Chelsea	The Thames, at Battersea	7	122147	22	18
Kent	The Ravensbourne in Kent	18	134200	31	23
West Middlesex	The Thames, at Barnes	72	277700	89	32
East London	The river Lee, at Lee Bridge.	26	434694	162	37
* (1) Lambeth and (2) Southwark.	The Thames, at Thames Ditton and at Battersea.	1	346363	220	64
Southwark	The Thames at Battersea	8	118267	121	102
* (1) Southwark and (2) Kent.*	The Thames, at Battersea, the Ravensbourne in Kent, and ditches and wells.	0	17805	19	107

\* In three cases (marked with an asterisk) the same districts are supplied by two companies.

It is a well known fact that the sewers, which receive the overflowings of the waterclosets, cesspools, and other sinks of impurity in London, flow at present into the River Thames and the River Lee, where, after dilution in the tidal waters, they are in various proportions variously mixed, and in some cases filtered, taken up by the pipes of the water companies, and pumped into the houses of the inhabitants of the metropolis for domestic use.

It is also a fact, well established by observation, that the cause of cholera in an epidemic acts more or less on the whole of the population, but that its fatality bears a certain relation to the impurity of the soil, the water, and the air.

The dirty water and dirty air sink towards the bottom of the London basin, from which they also incessantly send up dank vapours; and it has been shown, that, when large numbers are taken, so as to render other circumstances nearly equal, the mortality decreases progressively in the dwellings at different elevations.

After correcting the above Table and the tables of cholera 1848-49, for the effects of elevation, it is found that a large residual mortality remains, which is

fairly referable to the impurity of the water ; for it is least where the water is known to be sweetest, greatest where the water is known to be the most impure.

After the great loss of life in 1849, and the patient investigations of two able committees of the House of Commons, the present water companies were left in the undisturbed possession of the monopoly, which they enjoy, of selling the people of London water. In the present state of engineering and sanitary science, purer waters from gathering grounds, or from springs, could probably be procured, and be supplied at cheaper rates by new companies, or by the incorporated rate-payers. But this would disturb the values of large masses of invested capital. To avoid such a result, always undesirable, the supply is left in the hands of the existing companies ; but by Act of Parliament they are prohibited from obtaining supplies from the tidal waters of the Thames and Lee, after certain fixed dates.

It is enacted, that it shall not be lawful "after those dates" to distribute the pernicious waters over London. It unfortunately happens that in the invasion of cholera, with which we are threatened next year, every parish, except those which the Lambeth Company supplies, may receive waters as bad as those of 1849 without a direct violation of the Act of Parliament.

But the Water Companies will do well to bear in mind that the dates in the Act are the extreme limits of time beyond which they can supply London with impure water without a direct violation of the law. They may complete the works in half the time. They can accelerate their progress. And the returns which they have furnished will enable us to appreciate their zeal and spirit in the public service under an extraordinary emergency.

Instead of the distant dates of 31st August 1855, 1856, and 1857, which were fixed when the return of cholera was not contemplated, the companies should aim at supplying London with the water which they are then bound to furnish, at a date not later than the first of July 1854. This would probably be the means of saving thousands of lives, and entitle the directors to the public gratitude.

Dates after which it will not be "lawful" for the Water Companies to supply waters from the same sources, or of the same quality, as at present, to the inhabitants of London :—

New River	-	-	-	30th June 1857.
Grand Junction	-	-	-	31st August 1855.
Chelsea	-	-	-	31st August 1856.
West Middlesex	-	-	-	31st August 1855.
East London	-	-	-	August 1856.
Southwark	-	-	-	31st August 1855.

The Grand Junction and the Southwark Companies state that they propose to complete their works in 1854, a year before the limit prescribed by the legislature.

The following return has been received from the Kent Water Company :—

1. What is the source from which the Kent Water Company obtains the Water for the supply of the London districts?—The Ravensbourne, below the Lewisham Mills.

2. Is it the same as it was in 1849?—Yes.

3. Are the methods of filtration and purification the same as those in use in 1849?—The same.

4. Is the area of supply the same?—It is increased largely in the direction of Lewisham, Lee, Charlton, and Plumstead. The water supplied is double in quantity as compared with that of 1849.

5. If any changes have been made in either of the above particulars, what are the date, and the nature of those changes?—No change ; but large additions to steam power, filter beds, and depositing reservoirs.

6. If any change is contemplated in the existing arrangements, what is its nature, and when is it likely to come into operation?—No change, but additions are still in progress.

The following is an extract from a letter accompanying the above return, and addressed to the Registrar-General, by Mr. Morris, the Engineer of the Kent Waterworks.

“The Kent Company’s district is mentioned as having an elevation of 18 feet above high-water mark; in reality it varies from a few feet below to 200 feet above high water, averaging 100 feet.

“Blackheath, Woolwich, and Plumstead Commons, Charlton, and the upper parts of Lee and Lewisham, are among the most healthy localities near London, and are supplied, in common with the lowest levels of Greenwich, Deptford, and Woolwich, with pure water, from the same filters and mains of the Kent Company.

“I submit for your consideration whether any connexion can exist between the 27 deaths from cholera, reported in your Table as having occurred in the localities supplied by this company, and the water from these works, and whether the rate of mortality may not be more fairly attributed to lower levels and want of drainage.

“The only part of Rotherhithe we supply lies between the Surrey Dock entrance and the commercial Docks, and is in fact a narrow island formed by the Thames on one side and the docks on the other; and I should particularly instance this locality in opposition to the inferences in your Report; lying low, without drainage, it is precisely the spot where cholera should make the greatest progress, and we find at the last visitation the number of deaths here was fearful. At that time, at the earnest solicitation of the inhabitants, pipes had been laid in part, and as yet but few houses were in supply. At this time the whole of the streets and courts have pipes, and the use of the company’s water is general. I have carefully examined the weekly returns, but cannot find a single death throughout any part of our Rotherhithe district.”

In reference to the observations of Mr. Morris, it is only necessary to remark that the water supplied from the Ravensbourne, by the Kent Company, although it is open to considerable contamination, may be tolerably good and the mode of supply not very objectionable. The Registrar-General is not in possession of any facts, and has not published any results at variance with this view. A mortality of 23 in 100,000 inhabitants in the district supplied by this company is a favourable result as compared with others in the same Table, which run up to 60 and 100, and, so far as it is less favourable than some, the effect may be due to causes (among which well-water may be one) over which the company have no control. The statement with regard to that part of Rotherhithe supplied by the Kent Company is the subject of inquiry, and though the part referred to is not large, the fact, if established, will, so far as it goes, speak favourably for the company’s water.

The general conclusion drawn from the Table in No. 47 of the Weekly Return, though, as there stated, it may not be supported in every instance, is still correct; viz., “the impurity of the water with which the inhabitants of London in the several districts are supplied is in nearly a direct proportion to the mortality from cholera.”

Mr. Lewis, the Registrar of Isleworth, has favoured the Registrar-General with a statement relating to the injurious tendency of impure water used for domestic purposes, of which the following are the main facts:—“On Thursday, 24th ultimo, 4 deaths from malignant cholera, proving fatal in a very short time after the first attack, were registered, which had occurred in 3 new houses at North Hyde. In a block of 3 houses situated on the canal, where 3 of these fatal cases occurred, there are well-paved yards, dustbins, &c., and the dwellings are kept perfectly clean. In another block of 8 cottages there are large gardens instead of paved yards, all apparently very clean. The persons attacked had been fed and clothed sufficiently; the only thing complained of was the want of water. There is but one pump to 11 cottages, and the water obtained from it is so bad that the mother of the 2 children who had died could not use it. Lately she procured some for washing her house, but the stench was so intolerable that she threw it away. As a substitute she used the water from the muddy canal both for house-work and drinking. A pailful of this water looked as if a handful of flour had been thrown into it.

Dead dogs and cats, with other impurities, are frequently seen floating in the canal, and the water is hourly disturbed by numerous barges passing up and down. About a quarter of a mile distant stands another block of 6 cottages on the same side of the canal, and opposite a vitriol factory, where there is not a single pump; and the shocking state of the canal from which the cottages must take their water is bitterly complained of."

## DEATHS from CHOLERA in the first Fifteen Weeks of Two Epidemics.

	Week ending	Aug. 27	Sept. 3	Sept. 10	Sept. 17	Sept. 24	Oct. 1	Oct. 8	Oct. 15	Oct. 22	Oct. 29	Nov. 5	Nov. 12	Nov. 19	Nov. 26	Dec. 3	
1853	Mean Tem- perature -	58°·6	55°·7	56°·1	57°·6	54°·6	52°·4	48°·6	52°·0	48°·6	55°·5	48°·9	45°·7	38°·5	36°·7	40°·0	Mean 50°·0
	Deaths -	18	16	7	16	29	47	66	45	83	99	102	98	72	46	28	Total 772
	Deaths -	13	30	45	34	65	62	54	34	20	21	29	31	30	61	94	Total 623
1848-9	Mean Tem- perature -	60°·3	52°·1	44°·7	51°·5	44°·9	40°·3	42°·1	45°·5	46°·7	49°·0	50°·2	37°·5	41°·2	30°·7	39°·3	Mean 45°·1
	Week ending	Oct. 7	Oct. 14	Oct. 21	Oct. 28	Nov. 4	Nov. 11	Nov. 18	Nov. 25	Dec. 2	Dec. 9	Dec. 16	Dec. 23	Dec. 30	Jan. 6	Jan. 13	

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