

8<sup>th</sup> September  
Memory Verse

When thou passest through the waters,  
**I will be with thee;**

and through the rivers,  
they shall not overflow thee:

when thou walkest through the fire,  
thou shalt not be burned;

neither shall the flame kindle upon thee. Isaiah 43:2

Two London lessons today and both about water!

Map work and something to explore and research

The great River Thames, on the banks of which stands our capital city, London, has changed dramatically over the centuries. The river, now deep, narrow and tidal was once broad and shallow, winding through marshes where lethal malaria (“marsh fever” or “ague” it was called) carried by mosquitoes was a prevalent problem. But when did this change take place? Who first began what was effectively the canalisation of the Thames? One man was fascinated by the whole question and determined to find out the answer: Flaxman Charles John Spurrell (1842– 1915) who was born on 8<sup>th</sup> September.

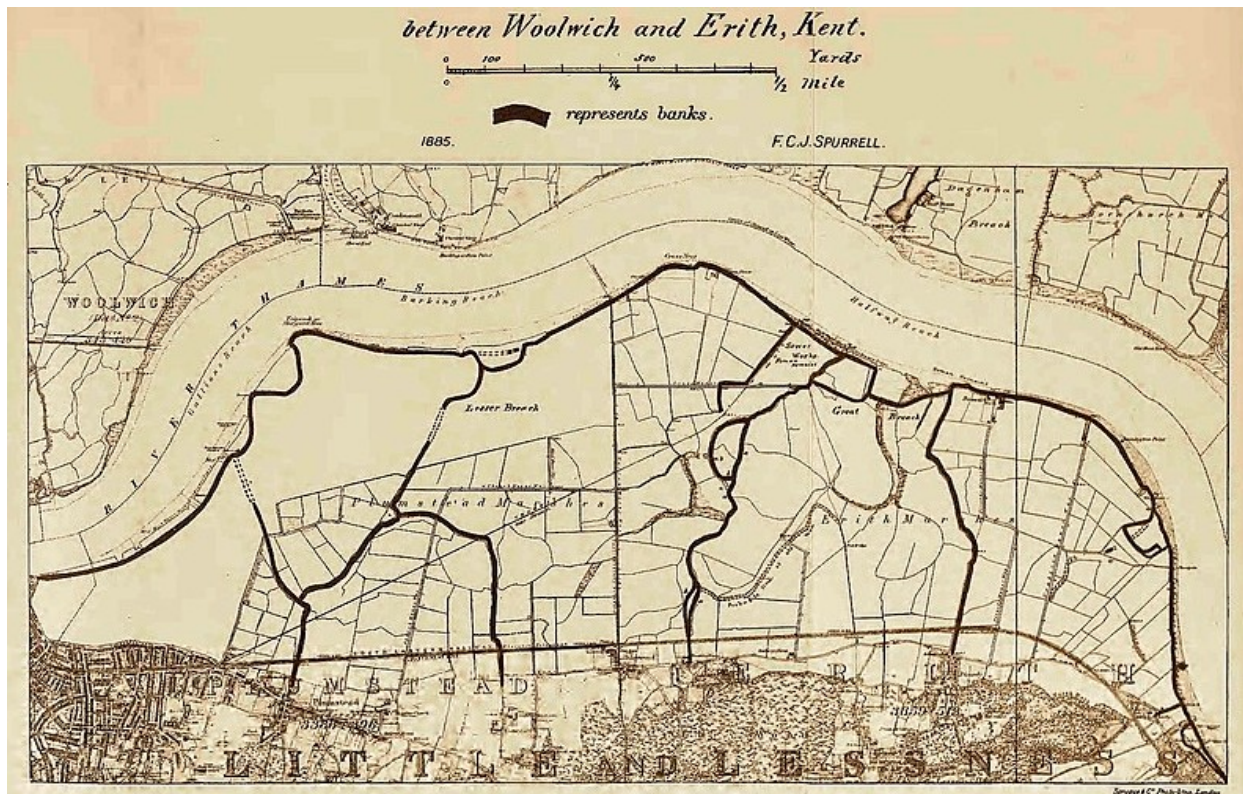
Flaxman was an archaeologist, a geologist and an early photographer and he lived in Kent not far from the Thames. Previous historians had thought the walls that keep in the Thames had been begun by the Romans. Flaxman disagreed. He made an in depth study of the whole topic examining the area minutely. He visited the sites of excavations going on at the time such as those for the new Albert Dock and everywhere he looked he found a similar pattern. There were multiple layers of mud and peat. On top of this about 3 metres below the current surface was a layer containing artefacts such as Roman pottery and other traces of habitation. He also examined plant and animal remains that were uncovered. These showed that what were then tidal areas had once been freshwater marsh. “By the continued sinking of the land, the sea gradually crept up the valley until, at the present day, the ordinary tide reaches as far as Richmond,” he wrote.

Flaxman came to the conclusion that the land in the area was sinking and his conclusion is now considered to be correct! This meant that back in the middle ages, when the land was higher, the tides would have had less effect. The meant that it was easier for farmers and local people to build walls to protect the land. As the land gradually sank and the tides gradually grew, the walls also were gradually raised by the local people to protect their land.

Then also began a process called “inching.” From behind the high walls that protected their land the farmers extended their usable land into the marsh. First two new walls would be built at more or less right angles to the existing wall. When that had been done a third wall would be built to connect the two new walls together. This made an enclosure which could be drained by sluices that let off water at low tide. The soil thus won from the marsh was peaty and fertile. It was ideal for growing grain which could then be sold to feed the growing population of London. Gradually more and more land was won from the river marshes in this way. It was the third wall of each enclosure that was important in the next step. Gradually as there was more and more inching these became joined together until they formed a continuous wall. This process happened not once but a number

of times.

The walls were thrown up to win the land from the water, and it was not until the union of the parallel walls had been nearly or quite completed, that it was perceived that a much more important thing to the country at large had occurred, viz., the deepening and straightening of the common water-way [the Thames]. For as the parallel banks approached each other the tidal currents ran more swiftly and the scour increased, so that the waterway was shortened and larger ships could travel further inland.



Flaxman drew detailed maps of the walls he had discovered revealing a patchwork of walled enclosures and banks which had gradually won the land for agriculture and as a by-product made the river navigable.

As a child I lived in this area by which time it had been almost completely covered with buildings. If anyone had told me about how the land had been won and taken me to explore the remains that were to be seen, I think I would have been fascinated and eager to know more. There are “Dene holes,”<sup>1</sup> sluices and even caves that date from the time when the land on which the suburbs were built was won from the river marsh – so much excitement lurking among the rows of houses!

Make sure you know what your own area was like in the past. You might be very surprised. What evidence can you find of what the land was like in days gone by? Can you build up a picture of what the area was like in the past? Your local library is a good place to begin your researches. The more suburban and full of houses your area is the more different it will have been in the past. Perhaps you could even make your own series of drawings or maps based on what you find out.

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1 Old chalk pits where farmers mined chalk to use as fertilizer on the peaty fields.

## A story to read from medical history

On 8<sup>th</sup> September 1854 the handle of the public water pump in Broad Street,<sup>2</sup> London's Soho was removed by the parish authorities on the advice of Dr John Snow (1813-1858). This saved many lives and marked an advance in the understanding of disease. Here is the story of the pump adapted from the words of his friend the Rev Henry Whitehead, (pictured on the next page) whose energetic investigations enabled Dr Snow to corroborate his theory. Read his account carefully. It tells you quite a bit about careful investigation – and also quite a bit about the character of that open-minded sleuth, Henry Whitehead.



### The Broad Street Pump

Early on the morning of September 1<sup>st</sup>, 1854, in the Berwick Street district of St James's, Westminster, I was asked to visit a house, in which lay, already collapsed, four persons who had been seized with cholera during the night; and, on leaving this house, whichever way I turned, I came upon similar scenes. At noon, when I met my brother curate and the Scripture-reader for a short time in the vestry of St Luke's Berwick Street, I learned that they had each been occupied all morning in the same way as myself. The rest of the day was spent in the same manner. This state of things apparently continued for four days. The ravages of the disease, in a small and remarkably well-defined part of the parish, were very severe – nearly 700 persons having been fatally seized within a circuit of 250 yards radius from the point of junction between Broad Street and Cambridge Street. Of the streets thus devastated Broad Street itself suffered the most severely, its population having been just decimated. This great outbreak was limited in its extent, brief in its duration, and continually on the wane from the very first moment of its appearance.

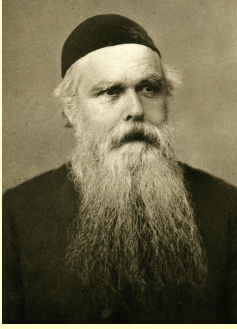
Of course, as soon as it began to subside we indulged in speculation respecting its origin. For my own part I found myself rebelling against the celebrated dictum that, “whilst pestilence slays its thousands, fear slays its tens of thousands;” which saying I have come to regard as an insult to the memory of the dead, many of whom behaved most heroically. “Weren't you afraid,” I asked of one old man in the workhouse where very few deaths occurred, “when they brought in so many dead and dying?” “We just were!” he said.

“Yes, but the workhouse was at least kept clean,” some will say. Very likely. And this leads me to say that outside of the workhouse the clean and the dirty, the brave and the timid, fared alike in death or escape. The very filthiest house in the district was one of only four houses that escaped without death; whilst, with in a few yards of this house, a model lodging house lost two of its inmates. Cholera seized alike and spared alike persons of all habits and all circumstances.

Nevertheless we were not without hope that its remarkable character would render the determining cause somewhat easy of detection. We had observed that its limits in every direction were most sharply defined. The beginning of the outbreak was very clearly marked in point of time. It was evident that something new and distinct suddenly came into operation on the last night in August.

A committee had been formed by the Vestry of St James's to inquire into the circumstances of the case composed of eight vestrymen, six medical men and one other clergyman besides myself. A

<sup>2</sup> Image of the modern replica of the Broad Street Pump: By Jamzze - Own work, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=99243672> For more about water and pumps see the lesson for 29<sup>th</sup> September.



report was drawn up. In this investigation we felt some special or local conditions must have obtained to intensify its influence within the small compass which demanded our more immediate attention. Every local condition, therefore, of the infected district was minutely investigated. But we could not find any satisfactory explanation of the sharp line of demarcation which on every side surrounded what we termed “the cholera area.”

It was, however, in the anomalies that we found the clue which ultimately led us to a unanimous conclusion that the sudden, severe, and concentrated outbreak, beginning on August 31<sup>st</sup>, and lasting for the few first days of September, was in some manner attributable to the use of the impure water of the well in Broad Street.

For such outbreaks there is required an agent which can freely convey the poison even into well-regulated houses. And in searching for this agent, we are reduced to decide between air and water. But the atmospheric theory always breaks down in the “anomalies” and “eccentricities,” whilst it is precisely in these circumstances that the water theory, with a proper investigation, generally acquires its greatest confirmation.

One member of the committee, the late Dr Snow, even before the committee was formed, had propounded this opinion and indeed had prevailed upon the parish authorities to remove the handle of the pump on the 8<sup>th</sup> of September. But scarcely anyone believed in his theory. For my own part, when I first heard of it, I stated to a medical friend my belief that a careful investigation would refute it.

I knew the inhabitants of Broad Street so well, and had occasion almost daily to spend so much time among them, that I should have no great difficulty in making the necessary inquiries. Accordingly I began an inquiry which ultimately became very elaborate. I received from Dr Snow a copy of the second edition of his work on “The Mode of Communication of Cholera,” in which I found that he attributed the influence of the Broad Street Well not to general impurity of the water, but to special contamination of it from cholera patients, waste from whom he conjectured must have reached the well from a sewer or cesspool. I still objected to his theory. As for cesspools, I at that time supposed they had mostly been abolished.

However, the evidence implicating the pump kept on accumulating, not only in my hands, but also in those of other members of the committee until at length sufficient evidence was collected to bring the whole committee to the unanimous verdict which they finally recorded.

It appeared, according to a carefully executed plan of the district, in which every house and every death was indicated, that the Broad Street public pump occupied a strikingly central position in the “cholera area;” that there was no other public pump within the area; and that, except in one direction, the mortality diminished almost to total disappearance on approaching decidedly nearer to any other pump. The exception was in the streets near the pump located in Little Marlborough Street but the inhabitants of those streets had conceived a dislike to their own pump and used the Broad Street one instead. Dr Snow examined the cases of 48 persons who had died in houses nearer to other pumps than to that in Broad Street, and discovered that 28 had actually from preference drunk the Broad Street water shortly before being attacked, whilst there was a probability that 10 of the others also drank it.

St James's workhouse, not 150 yards from the centre of the area, surrounded on all sides by houses in which the deaths were numerous, and subject to the continuous importation of the dying and the dead, lost only five of its 500 regular inmates. The pump water was never used there.

A lady, residing in Hampstead (West End), being very partial to the Broad Street 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 September 1<sup>st</sup>, and died the next day.

The street assigned to me by the committee, though I more or less investigated every street in St Luke's district, was Broad Street. Any one who has ever been engaged in a similar investigation will at once understand the peculiar advantages for such a purpose of a position which enabled me to choose my own time and opportunity for visiting each house. In most of the Broad Street houses, every floor, and in some cases every room, contained a separate family. Every family had to be visited, and, as far as possible, each member of it conversed with. On the occasion of each visit, the people would, for the most part, as I had been with them during the outbreak, themselves turn the conversation to the cholera. I was thus able without obtrusiveness, to examine and cross-examine them and to check the evidence of one witness by that of another. In this way I collected a great number of facts concerning the habits both of the deceased and the survivors, making a point of letting scarcely a day pass without gaining some information, which I tabulated, and pondered over every evening. The street had been deserted after the outbreak by more than half of its population. I followed many of them to their new abodes, sometimes a long way off, and finally succeeded in obtaining more or less information respecting nearly 500 persons resident in Broad Street at the time of the pestilence.

What after all was the matter with the well? It was examined by the Paving Board and found free of fissures or communications with drains or sewers and the water had been tested and found free of contamination. This confirmed my original bias but I still collected data. At the very close of my enquiries, I accidentally lighted on a fact which led to further examination of the well, and to the excavation of the soil between the well and the nearest house. It happened in this way.

There were three cases of cholera in Broad Street before the 31<sup>st</sup> August, on the evening of which day the great outbreak began. In consequence of Dr Snow's suggestions, I made particular inquiries respecting the two persons seized on August 12<sup>th</sup> and 30<sup>th</sup> but singularly enough, I at first overlooked the case of August 28<sup>th</sup>; or rather I had recorded only the date of death, September 2<sup>nd</sup>. I can only account for my not having inquired particularly into this case by the fact of its having been that of an infant. One day, however, whilst searching a file of the Registrar's returns for another purpose, I came on the following entry:- "At 40 Broad Street, 2<sup>nd</sup> September, a daughter, aged five months: exhaustion, after an attack of diarrhoea four days previous to death."

From my familiarity with the street, I knew that this was the house immediately facing the pump. So I hastened off at once to this house, and ascertained from the mother, who occupied the back parlour that napkins from the sick child were steeped in pails, the water from which was poured partly into a sink in the back yard and partly into a cesspit in the front area. Being struck with the dangerous proximity of this cesspool to the pump-well, I communicated the facts to the committee, who forthwith ordered an investigation to be made.

From this examination there resulted the following disclosure. Old fashioned, flat-bottomed, its mortar-joints perishing, its brickwork decayed, the main drain from the house entered the sewer at the top instead of the bottom, thereby dispensing with the usual fall, and facilitating the premature exit of fluid through its sieve-like sides. A poorly constructed cesspool was discovered in the front area which rivalled the drain in the disreputable state of its brickwork. In close proximity both to drain and cesspool – its water-line but eight feet (about 2.5 metres) of vertical depth below the bottom level of the cesspool – two feet eight inches (less than one metre) the horizontal distance between its outer brickwork and the drain – stood *the Broad Street Well*.

Can you answer these questions?

How had Henry Whitehead first thought cholera was spread?

If he had been correct, in what danger would he have been when visiting his parishioners?

Did this stop him visiting them?

What can you gather about the character of Henry Whitehead from this?

How might today's memory verse have helped him?

Was he prepared to change his mind when faced with the evidence?

Do you know where your own water supply enters your house from the water main? This is something everyone should know as at this point there is generally a stopcock that can be turned off in the event of an emergency such as a burst pipe inside the house.

### Something to think about

Sticking to one's views, even in the face of the facts, is a very common human failing. To avoid this failing having very serious consequences people have developed ways of overcoming it. For instance, passenger jet aircraft are always flown by two pilots. One flies the plane and the other monitors. Both are specially trained so that, in the event of an emergency, the flying pilot will fly the aircraft while the monitoring pilot will be critically reviewing and challenging the flying pilot's assumptions. Many accidents have been avoided by this simple technique. We can see that Dr. Snow and Rev. Henry Whitehead worked together in quite a similar way. Henry Whitehead was convinced that Cholera was transmitted via the air. When his friend challenged that idea he set to work to examine the evidence. Good scientists are never afraid of being challenged and real scientists must be ready to change their theories in the face of evidence. It does not matter how many scientists agree on a theory, if successfully challenged by the evidence it should be either modified or abandoned.<sup>3</sup>

### History in your life time



On **September 8<sup>th</sup>** 2022 Queen Elizabeth II died. We learned about the late queen in the lesson for April 21<sup>st</sup> so if you were not able to do that lesson this year you could look at it today. Can you remember what you were doing when you heard the news of the Queen's death? Perhaps you made a note of it in your diary. If you did not jot it down now. You could also take this opportunity to pray especially for King Charles III that God would be gracious to him and truly answer that prayer which we all pray when we sing *God Save the King*.

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3 <https://answersingenesis.org/creation-vs-evolution/evidence-for-young-earth-creation/>

