

# HOMAN (Geo.)

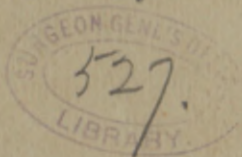
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A Contribution to the Study of  
Water-borne Cholera.

BY  
GEORGE HOMAN, M. D.,  
HEALTH COMMISSIONER, ST. LOUIS.

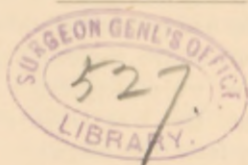
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A CONTRIBUTION TO THE  
STUDY OF WATER-BORNE CHOLERA.\*

BY GEORGE HOMAN, M. D.,  
HEALTH COMMISSIONER, ST. LOUIS.

IN the burying ground of the St. Louis Quarantine Hospital stands a plain monument, erected, as the inscription upon it reads, in memory of one hundred and seventy-five non-commissioned officers and soldiers of the Fifty sixth United States Colored Infantry who died of cholera in 1866.

It chanced that this monument and its meager inscription were brought to my notice at a time when I was somewhat occupied looking into the history of epidemic cholera, and the mortality recorded seemed so excessive that I was led to gather what further information I could in regard to it.

To this end I applied to the Surgeon General, United States Army, who in reply sent a copy of a War Department circular issued from the office of the Surgeon General, dated May 4, 1867, which was stated to contain all the data known respecting the cholera epidemic among the officers and soldiers of the regiment named in 1866.

\* Read before the Association of Alumni of St. Louis Medical College, April, 1894.

This document contains no account of this outbreak by any medical officer who had personal knowledge concerning it, but includes a report by the commanding officer, dated August 18, 1866, from which, together with information obtained direct from the War Department and other sources, the following facts were taken :

Early in August, 1866, the regiment in question was on duty in Arkansas, five companies being stationed at Duvall's Bluff, and the remainder of the command, with regimental headquarters, was at Helena.

Being ordered to proceed to Omaha *via* St. Louis, the command, seven hundred and eight strong, assembled at Helena, and the five companies that had been at Duvall's Bluff embarked on board the steamer *Continental* on the evening of August 9th. The remainder followed on the *Platte Valley* the next morning.

The colonel states that the command had been unusually healthy during the summer, and the surgeon confirms this saying that the regiment was in the best of health at the time of embarking.

No medical officer accompanied the command on this fateful journey, which has but one known parallel in American military-medical history, and perhaps few anywhere else.

Within a few hours after the boats swung out into the current of the Mississippi River mischief began, and by the time the *Continental* reached Cairo she had on board thirteen corpses and between fifty and sixty cases of cholera, all belonging to this regiment. More than fifty men of this command died on this boat before St. Louis was reached, the second boat not suffering so severely, but hardly a soldier in the entire regiment escaped an attack of the disease.

About a week after these troops left Helena the commander reported the deaths to that time among his men as

one hundred and thirty-nine, but the end was not reached until the number recorded on the monument had perished, if, indeed, that number is correct, as it appears from the War Department records and information from other trustworthy sources, that the mortality in this body of men from this one cause was nearer one hundred and ninety than one hundred and seventy-five—a loss of more than one in every four in the command.

Of course, as thinking beings the question occurs to us, What caused this sudden and appalling outburst? And having duly considered the clouds and the moon and the malign influence of the stars without satisfactory result, we are compelled to look under our noses, so to speak, and study the immediate facts and circumstances connected with it.

At the time the regiment left Helena, sound and well, for this place, people were dying of cholera here at the rate of more than a hundred per day, the reported deaths from that disease in St. Louis for the week ending August 17th being seven hundred and fifty-four, and a very large proportion of the total deaths from this cause occurred in the territory between the river and Seventeenth Street and Cass and Chouteau Avenues. This territory was pretty well drained by sewers—the total length of public and district sewers here in 1866 being about fifty miles—and during the course of the epidemic the sewage thus poured into the river was heavily charged with the specific cholera organism.

The average stage of water in the river during that August was about twelve feet, and in view of all the facts elicited in regard to this occurrence, and of what is so well known now concerning water-borne cholera, there can remain no reasonable doubt that this body of men was poisoned by St. Louis sewage borne in the current of the river

as far south as Helena, for the soldiers began to sicken and die within twelve hours after embarking, and no other source of water supply was accessible to them except the river.

As already stated, this incident, in the extent of fatalities attending it, stands with but one known equal in American history, according to data furnished by the Surgeon General, and a very imperfect examination of reports of foreign occurrences of like nature shows but one instance where cholera mortality in a similar organization was exceeded, and this will be noted presently.

In an address on Water borne Cholera, by the editor of the *British Medical Journal*, delivered in July, 1893, before the American Medical Association, evidence was heaped on evidence showing the direct, positive agency of polluted streams, used as sources of human water supply, in the causation and spread of Asiatic cholera.

In the abstract of sanitary and consular reports issued by the Marine-Hospital Service for the week ending November 4, 1892, there is a report from the American Consul at Odessa, dated at Tashkent, Turkestan, September 9th, same year, which contains most signal proof of this contention, and with your permission I will cite a small portion of it. He says:

“At Samarcaud three regiments of infantry were encamped side by side on a level plain close beside a stream of water. The colonel of one of the regiments took the most extraordinary pains to prevent his men from being attacked with the cholera, and he succeeded. In the first place, he caused every article in camp to be thoroughly cleansed with hot water and then disinfected. He compelled his men to bathe every day in hot water that had been boiled, and a guard was constantly maintained, whose duty it was to keep the soldiers from drinking the river water and to carry out the colonel's instructions. The result was that not a single case of cholera occurred in the regiment,

while the other two regiments which were camped alongside lost over a hundred men from cholera. In these regiments the ordinary precautions were taken, but no such measures were adopted as I have mentioned above."

Again he says :

"At Ashabad the cholera had almost disappeared early in August, and the event was celebrated with much rejoicing on the anniversary of the Emperor's name-day, which occurs in that month. The Governor-General gave a dinner, to which he invited a numerous company, and the various regiments were granted extra rations that they might rejoice on the occasion. The day, which began so auspiciously amid general rejoicing, was destined to have an ending which has no parallel in history. Of the numerous guests who attended that dinner, one half died within twenty-four hours. A military band of about fifty men who played during that fatal dinner lost forty of their number with cholera, and only ten of the men reached camp that night. One regiment lost half its men and nine officers ere the sun rose the following morning, and within forty-eight hours thirteen hundred people died with cholera. The cause of this outbreak was clearly traced to a small stream of water which supplied the town. Four days previous the authorities were informed that cholera had broken out at a small Turkoman village situated on the banks of this stream about four miles from Ashabad. The inhabitants of this village were ordered to move their *kriltkas* (tents) several miles back on the hills, which they did. On the day previous to the reappearance of the cholera at Ashabad a very heavy rainstorm occurred which washed the banks of the river and swept refuse and other matter from the abandoned village into the stream, and this matter was carried by the water into the city and distributed to all parts of the town by the numerous open canals through which the inhabitants were supplied with water. It was this contaminated water which caused the reappearance of the epidemic and the frightful mortality which followed. The population of Ashabad was not more than thirteen thousand, of which ten per cent. died within forty-eight hours."

Returning now to the Mississippi River, what evidence other than that of an inferential character can be brought forward in support of its impeachment as a death-dealing stream in 1866?

It happens that confirmation strong and proof convincing is afforded by the War Department document already cited in the account it contains of cholera among the troops at New Orleans the same year, the facts in brief being as follows:

On July 30th, on account of riotous disturbances in that city, the Eighty-first United States Colored Infantry was stationed at the foot of Canal Street and remained there ten days, during a part of which time the men drank water from the river, and many cases of cholera occurred until pure water was supplied, which had a most marked beneficial result, according to the surgeon's report.

The supply of distilled and rain water for the use of the One Hundred and Sixteenth United States Colored Infantry was scant for a day or two and some of the men used river water. Soon two cases of cholera appeared. Pure water was supplied and there were no more cases in the regiment.

Again, the Ninth United States Colored Cavalry and Thirty-ninth United States Infantry were supplied, but not sufficiently, with distilled water until the cisterns at their camp could be repaired and filled. At first the distilled water, sent hot in casks, could not become cool before it was needed. The men preferred to drink the river water because it was cold, and did so against orders and repeated warning, accepting the risk of disease rather than wait for the water to become cool and aerated. Case after case of cholera followed. Critical inspection failed to develop any other probable cause except the use of river water, and recommendation was made to move the regiments away

from the river far enough to prevent the men obtaining it. To avoid moving, the cavalry put on a strong guard to keep the men from the river, and cistern water was supplied them. Cholera from that time ceased in these regiments.

In view of the foregoing facts, much interest attaches to the question as to the origin of the cholera virulence of the river water at New Orleans, for at that time there was no sewage flow from that city into the river in front of it, nor was there any sewerage system worthy the name in any town or city above it nearer than St. Louis.

No cholera was known to exist at Helena while the Fifty-sixth Regiment was there, although before its departure the surgeon informs me that this disease was reported as being present in St. Louis and New Orleans.

Up to the time of embarking, the command in question drew its water supply from wells and springs which were kept free from surface contamination.

Upon a full consideration of the facts and circumstances connected with this epidemic there seems to be no escape from the conclusion that the Mississippi River was poisoned from here to the Gulf of Mexico by cholera-infected sewage in the summer and fall of 1866; that the source of that sewage was St. Louis; that a flow of over one thousand miles in open channel failed to free those waters of perilous risk to human health and life, and that this fact should lay forever in its grave the worn-out notion that water can purify itself of such living elements by merely flowing any distance whatsoever—a notion or superstition held by many who should know better, and dating from a time when no living thing much less in size than a tadpole was recognized as existing in water.

In the extracts from correspondence accompanying this paper mention is made of the eating of raw sugar by the

soldiers while *en route* to St. Louis as being a possible or actual cause of the frightful mortality experienced, especially by the detachment on board the Continental.

That sugar alone could produce such a result is impossible, else cholera epidemics would occur daily; but recent investigations serve to throw much light on the rôle sugar may have played in this instance. The responsibility of the common house fly as the active medium in the infection of food substances, and causation of otherwise mysterious outbreaks of cholera, seems well established; and the infection at New Orleans of the sugar carried by the Continental, or while *en route*, may be explained in this way, and sufficiently shows the relation of cause and sequence when the partiality of flies for alvine dejecta and saccharine substances is borne in mind.

I beg to add, as tending to throw additional light on the subject matter of this paper, some extracts from the correspondence of those who were, more or less, actors in this tragical occurrence. They are as follows:

From a letter from Daniel A. LaForce, M. D., of Ottumwa, Iowa, late Surgeon Fifty-sixth United States Colored Infantry, dated January 26, 1894:

"I was in charge of the United States General Hospital at Helena, Ark., in July, 1866, when the Fifty sixth United States Colored Infantry received orders to go to Fort Leavenworth, Kansas. I had orders to turn over the hospital supplies and join the regiment at Fort Leavenworth.

"There had been very little sickness in the regiment during the spring and summer. The regiment was camped near the hospital, and the sick reported to me at the general hospital for treatment. The assistant surgeon was on duty at Duvall's Bluff with two companies of the same regiment.

"There was no medical officer to accompany the regiment, as it was necessary for me to stay long enough to turn over the hospital and supplies. The regiment was in good health at the

time of leaving. I followed in about three days and found it in quarantine near St. Louis. Surgeon Swift, of the regular army, was in charge of the camp, and I relieved him. There were two young city physicians who volunteered to assist in caring for the cholera patients. They were noble, whole-souled, and untiring in their efforts to aid us in the care and treatment of the cholera patients. Their names were Outten and Quarles.

"As stated, the regiment was in the best of health when they embarked on the Continental or Platte Valley. We knew of no cholera on the boats until it broke out among the troops about twelve hours after leaving Helena, and by the time they reached Memphis there were about forty cases reported. There was no medical officer with the regiment except a hospital steward, so Colonel Bentzoni, commanding, employed a physician to accompany them to St. Louis.

"It was currently reported and believed that the eating of the raw sugar by the troops was the cause of the epidemic. Four or five hundred of the regiment had the cholera and a hundred and seventy-five died at quarantine, to whom a monument was erected by the surviving members. The scourge abated by the latter part of August, and the regiment was mustered out of service September 15, 1866."

From same, under date of February 2, 1894 :

"In answer to your inquiry as to the source of water used by the Fifty-sixth Regiment, United States Colored Infantry, at Helena and Duvall's Bluff, would say that I did not accompany the detachment to Duvall's Bluff, consequently am not able to state the source of water supply at that place.

"At Helena the water was from springs and wells. They were kept clean and free from surface water. It was my opinion that the water was pure.

"The regiment was encamped mostly in log barracks erected by the soldiers on the east side of a sloping hill with sandy loam. They used the water from the same source for about two years. Quite a good many of the soldiers died the first year of malarial fever and small-pox. In the early part of the cholera epidemic nearly every one that was attacked died in a

few hours. Later on the disease became less fatal. I remember that nearly every soldier in the ranks suffered with an attack more or less virulent. A hard-fought battle would have been a picnic to going through the ordeal of the scourge. I think fear caused many of the cases to be fatal among the negroes. I saw some cases die in two hours from the appearance of the first symptoms. They seemed to be in a stage of collapse almost from the start. Several officers had the cholera, but only one died, and that was Lieutenant Joe Brooks. He had so far recovered as to be able to be sent home to his father, Rev. Joe Brooks, of St. Louis.

"Cholera had been reported at New Orleans and some other points on the lower Mississippi and at St. Louis shortly before the regiment vacated Helena; but up to that time there had been no case reported at Helena."

From W. B. Outten, M. D., St. Louis, under date of January 26, 1894 :

"In August, 1866, Colonel Labadie, then Department Purveyor of the United States Army at this point, solicited Dr. R. S. Anderson and myself to attend to a negro regiment which was then in transit, and among its numbers cholera had already appeared. The St. Louis Quarantine Station on the Iron Mountain Road, at its present position, protected the Mississippi River and prevented any arrivals who were foolish enough to come up by the river at that time, and there were not any who did come except in this instance a portion of the United States Army returning from the South.

"Accordingly, I signed a contract and went immediately down to quarantine, arriving there in the evening. The negroes had died so rapidly that they were not encoffined, but enshrouded in their blankets and buried at the old quarantine graveyard. I continued my work there for two days and two nights without any assistance; neither Dr. LaForce nor his assistant surgeon were on hand. On the third day of my arrival I managed to induce Dr. R. A. Quarles, who is now a resident of this city, to come down and help me. He and I remained with the regiment until the cholera ceased. If I remember

correctly, out of a regiment of some seven hundred, in the neighborhood of some six hundred or more were affected with the disease, and in the neighborhood of two hundred died from this cause.

“There is only one element of success in connection with this trouble, and that is in the direction of prevention, and which was indulged in in the epidemic at quarantine. We had sick call night and morning, and, instead of giving medicine to the collapsed men, we attended to the furred and coated tongue and incipient diarrhœa—that is, kept the well from being sick and thus robbed cholera of its material, and at the end of ten days no new case of cholera presented itself.”

From Major Charles Bentzoni, United States Army, late Colonel Commanding Fifty-sixth United States Colored Infantry, dated February 27, 1894:

“The troops on the *Continental* had been stationed at Duvall’s Bluff on the White River. I think they came down the river on another boat and were transferred to the *Continental*. Both the *Continental* and the *Platte Valley* came from New Orleans, where cholera had been epidemic for some time. There were rumors that cases had occurred on one or both the vessels, but I had neither time nor opportunity to make inquiry. The troops on the *Platte Valley*, on which boat I was, had been stationed at Helena. Aside from malarial affections, there was no sickness in the command at the time of embarkation. It is true that officers at the time laid much stress on the fact that men on the *Continental* had been eating raw sugar in great quantities; but there was no such cause on the *Platte Valley*. As to the probability of being infected by the water, I call your attention to the fact that the *Continental*, after only a ten hours’ run with the troops aboard, left the first case dying on the wharf at Memphis; and on the *Platte Valley* I buried the first case about fifty miles above Memphis. This is a very great distance from the supposed source of infection. In short, I believe both boats were infected at New Orleans.

“I engaged a Dr. Perkins at Cairo, and he had charge of the sick on the *Platte Valley* until we reached St. Louis.”

From James Sykes, M. D., of Beverly, Ill., late Assistant Surgeon, Fifty-sixth United States Colored Infantry, dated April 2, 1894:

"About the 1st of April, 1866, the second battalion of the regiment, consisting of Companies B, D, E, G, and K, were ordered to Duvall's Bluff, on the White River, in Arkansas, with myself as medical officer in charge. The command enjoyed excellent health till we were ordered to St. Louis, Mo., about the 1st of August, when the battalion rejoined the regimental headquarters at Helena, Ark. We had a few sick at that time—I think about eight or ten—but there was nothing peculiar about their sickness, I being left with them. Two weeks later they had all recovered sufficiently to travel, and I went by boat to Helena with them. A few days before we left Duvall's Bluff—say, about the 8th or 10th of August—there occurred two or three cases among the citizens that were strongly suspected to be cholera, and, from my subsequent experience with cholera, I am now satisfied they were genuine Asiatic cholera. I think these cases were still sick when we left, as I have no recollection how they ended. At that time cholera was prevailing along the river towns and on the boats. The troops at Duvall's Bluff used river water, which at that time was very clear, but hot. On our arrival at Helena we found the regiment gone to St. Louis, leaving on two boats. There had been a few cases of cholera at Helena when we arrived, and I think some of them occurred before the troops left. So I think it entirely probable that they had the microbes with them when they went on board. From the officers with the troops I learned at the time that most of the cases occurred on one boat. I think Surgeon La Force was with one boat, but I forget which one. They informed me that several cases occurred before the most infected boat reached Cairo, where the colonel took on two citizen doctors.

"I was informed at the time that the most infected boat had a quantity of raw sugar going to the refineries, and that the soldiers, being on the boiler deck, burst open several hogsheads of it, and ate as only colored men can. My own theory is that the soldiers either took the cholera microbes from Helena or

else they were already on the boat, and then, gorging themselves with raw sugar, allowed the pestilence to get in its deadly work. The fact that but very few officers took the disease at all, and they in a light form, would seem to indicate that it was something in the diet, rather than the water, as all used river water alike. But one officer died (Lieutenant Brooks), and he from a relapse occurring after he had recovered so far as to take a leave of absence to visit his family living in St. Louis. After the troops arrived at St. Louis they were removed to quarantine, and the cholera became general among all the companies. The above is from memory, and while I doubtless have forgotten some facts, the narrative is substantially correct."

From George M. Sternberg, Surgeon General, United States Army, under date of March 7, 1894 :

"In connection with your reference to mortality from cholera in your letter of January 26, 1894, I desire to invite your attention to an extract from a report of Major-General Macomb, given on page 81 of Forry's *Medical Statistics, United States Army*, Washington, 1840, as follows :

"Of the six companies of artillery which left Fort Monroe, five companies arrived at Chicago in the short space of eighteen days. . . . The loss by cholera in that detachment alone was equal to one out of every three men."

NOTE.—Since the foregoing was written the subjoined statement, under date January 17, 1895, has been received from Captain J. M. Thomas, who commanded the detachment on board the *Continental*, and which presents such a vivid picture of pestilential ravages—which, it is hoped, could never again occur in this country—that it is given nearly in full. The account is as follows :

"Replying to your request for information in detail concerning the cholera epidemic of 1866, and especially as it affected the Fifty-sixth United States Colored Infantry, will say: 1. The health of the detachment at Duvall's Bluff during our stay there was very good. 2. We left there about the last of July

to rejoin our regiment at Helena, Ark.; the name of the boat carrying us I do not now remember, but I considered its sanitary condition good. 3. When we embarked for Omaha, Neb., on the steamer *Continental*, August 10th, no cholera was known to exist along the Mississippi River at any point either above or below Helena. 4. The health of the passengers on the *Continental* was good and the sanitary condition excellent. 5. She was from New Orleans *en route* to St. Louis, and carried about thirty passengers.

"I will state that, on the 9th day of August, while at Helena, one of my men was taken violently ill and in a few hours died. The doctor certified his death to be caused by 'congestive chill,' but I must say the symptoms were identical with many others who afterward died and were called cholera deaths.

"We left Helena on the 10th of August with orders to report to the commanding officer at Omaha, Neb. At that time the health of the command was good. We had not gone far when an officer of one of the companies reported to me that one of his men was very sick and, he feared, was going to die. I directed that he should be sent to the military hospital at Memphis, Tenn., when we reached that point, which was done. I afterward learned that the soldier died. Next day, the 11th, many more were taken sick, and we began to realize that we had cholera with us in all its violence. The crew and passengers became panic-stricken, and for a time it seemed as if abject terror had taken possession of all on board; men prayed who never prayed before, pleading with their Maker to stay the pestilence. On our arrival at Cairo, Ill., three of our men were dead, and fully one hundred very sick. We called on the Mayor of that city to bury them, but he refused, saying, 'You have cholera on board your boat, and I want you to leave this city at once,' and slammed the door shut. Having no medicines or doctor on board, I tried to hire a physician to go with us to St. Louis, but none could be induced to take their chances on a floating pesthouse, as our vessel was at that time. We went to a drug store and purchased forty dollars' worth of cholera mixture, and returned to the boat and found that four others had died while we were away.

"After leaving Cairo I directed Captain O. R. Sensibaugh, my next officer, to land at some convenient point as soon as possible and bury the dead, retiring to my stateroom for much-needed rest, not having slept one moment since leaving Helena.

"About eight o'clock in the morning Captain Sensibaugh came to me and informed me that my orders had been obeyed, and that he had buried twenty-one men and one woman (a soldier's wife).

"About 5 p. m. we made a landing on a small island thickly timbered and buried twenty-one men and one woman, also a soldier's wife. On the morning of the 13th, as we neared Jefferson Barracks, we landed on the Missouri side for the purpose of burying ten men who had died during the night. One of the men, who assisted in carrying off the first body, on returning to the boat was taken violently sick, falling full length as if struck with a hand-spike, and was dead before the others were buried, and was carried off and laid beside them, increasing the number to eleven, making a total of fifty-three men belonging to our command and two women, soldiers' wives, buried between Cairo and St. Louis, all in the space of thirty hours.

"Arriving at Jefferson Barracks, I went to the telegraph office for a reply to my dispatch previously sent to General Sherman, but found no answer; therefore we were compelled to proceed to St. Louis. Upon our arrival at the wharf I directed Captain Washington to anchor in midstream while I reported to General Sherman for orders. I immediately repaired to headquarters, only to learn that he was in Nebraska, and my message had been forwarded, but no reply had been received, and no one at the general's headquarters would assume the responsibility of sending us to quarantine, as requested. We were thus compelled to wait until about 4 p. m. before the order came, as follows:

"If Captain Thomas, commanding detachment Fifth-sixth United States Colored Infantry, has cholera on board, send them to quarantine. SHERMAN, *General.*

"Colonel Swift, United States Medical Department, had anticipated the order and was already at quarantine, having proceeded by rail, and had hospital tents up and ready to receive

our sick as soon as we should land. He was accompanied by Dr. W. B. Outten (now chief surgeon, Missouri Pacific Railroad), and Dr. Quarles, of your city. After leaving General Sherman's headquarters, accompanied by Mayor J. S. Thomas and Captain (afterward Mayor) Joseph Brown, we were conveyed out to the steamer *Continental* with its awful cargo of human freight. When we landed at quarantine twenty-eight dead soldiers were carried off the boat, besides more than two hundred sick ones.

"Colonel B. L. E. Bonneville, United States Army, commanding at Jefferson Barracks, kindly sent a detail each day to bury our dead, for we had not men enough to attend to it. Our total loss was one hundred and eighty-four enlisted men and one officer—First Lieutenant Joseph Brooks, Jr.

"Colonel Bentzoni, with the remainder of the regiment, came in on the next boat and camped near us, and a day or two later we were joined by Major Wells and Dr. Sykes, our assistant surgeon, both of whom had been absent on leave.

"It was said our sickness was caused by eating unrefined sugar, with which our boat was loaded; but I do not believe our ills could be laid to that charge, for thousands died in St. Louis and other places all over this country who never tasted raw sugar, and, besides, a very few of the men had eaten of the sugar at all.

"The commissioned officers suffered very little inconvenience from the effects of the epidemic; most of us lived, as near as possible, the same as before. I had it quite severely, but attributed it to my having lost so much rest while attending to the needs of others, my sickness occurring several days after reaching quarantine.

"I had then served in the volunteer service of the United States for more than five years, had endured the usual hardships of camp life, and am free to say that I would gladly have served it all over again rather than pass through those scenes again, and witness the horrors of another cholera epidemic such as I did in the year of our Lord 1866."



