

WATER, WATER

Everywhere, but seldom fit to drink.

How the Analysis of the City Wells is Progressing.

Of 191 Wells thus far Examined Nearly all are Bad.

Where Some of the Good Wells are, as well as the Poor Ones.

HOW THE WORK ORIGINATED.

The attention of the people of Madison was first seriously called to the condition of their well-waters, about a month since, by the publication in the *STATE JOURNAL* of a thesis on the subject written and delivered by Mr. MAURUS SWENSON, then a student and now a tutor in the State University. Mr. SWENSON had conscientiously analyzed the waters of fifty-two representative Madison wells, and found, much to his own surprise, that almost every one of them were unfit to drink, owing in most cases to exhaled sewage. The published result of his labors led to a general demand for a wholesale and systematic analysis, and Mr. SWENSON was prevailed upon by the physicians, backed by the Common Council, to undertake the work. Accordingly, on the 6th inst., Mr. SWENSON opened a laboratory in Room No. 28, in the basement of the Capitol, and, in the employ of the city, invited the public to bring in their liquid samples.

This morning, a representative of the *STATE JOURNAL* called on the public analyzer of drinking waters, and, in behalf of its readers, investigated:

THE MODOUS OPERANDI.

The large room was quite well filled with curiosity seekers, and old men and women and boys, with quart bottles and pails of water in their hands, waiting their turn at the analyzing table, where Mr. SWENSON sat, fortified with his chemicals and his curious crystal apparatus. Upon surrounding tables, other chemical paraphernalia lay spread out, the entire array being seemingly enough to analyze all the well-waters and summer driks from here to New York.

"How look here, young man," said Mr. SWENSON, as he looked severely down on a stripling hoodlum, who had just handed in a spruce-bear bottle full of sparkling water; "you got this from the Capitol well—trot along, now, but don't do it again," and the Arabian of the curbstone slinked away with two or three of his fellows, a sheepish gleam in one eye and a roguish twinkle in the other.

"That's the way they try to deceive me, sometimes," said the chemist, as he looked up at the reporter. "Sometimes it's the boys, but oftener it is some man who ought to know better; when a man doesn't have any faith in chemical tests, he tries to deceive me by bringing in some water from the artesian well or Maple Bluff."

LOYAL TO HIS WELL.

suggested the reporter.

"Yes; it's curious, isn't it?" responded Mr. SWENSON. "Men, and women especially, are often so wedded to the family well, that they refuse to hearken to the least breath of suspicion against it; if they are induced, finally, to bring a sample of it here, and find it is foul as a cesspool, they still refuse to be convinced; then they attempt to argue the matter—the water is the same now, as God made it, a thousand years ago, they say;—and then their fathers drank it, or they have themselves drank it for twenty years and still live. There is no use arguing with a man who refuses to believe in the science of chemistry, and so I don't often attempt to. But the most of the people who have called, thus far, are satisfied with the verdict, and at my suggestion go home and clean up their premises, stop throwing dish-water on the surface, fill up and move their privy further away, or else give up using their water altogether, and get it from some source known to be good."

ONE HUNDRED AND NINETY-ONE WELLS have thus far been examined by Mr. SWENSON. He informed the *STATE JOURNAL* man that they averaged badly; in fact, the only really pure wells that have thus far been found, are: the Capitol artesian well, the artesian well at LENDERSTROM'S pop factory, the West Madison depot artesian well, all three of them producing water of a similar character. The well at Maple Bluff is as good as either of the three, but that is out of the city limits, and hence not legitimately in his line of investigation. The well at the High School is good; but those at the First and Second ward schools are very bad indeed; that at the Third is suspicious, the Fourth quite bad, but at the Fifth the water is pronounced good. Of the private wells in the city examined to this date, that of Dr. Wm. JACOBS' is the best. Perhaps the worst locality in the city is in the vicinity of the First Ward School; Mr. SWENSON thinks there is no good water to be had in that region.

AN ANALYSIS IN DETAIL.

At the request of the reporter, Mr. SWENSON proceeded with a test in detail, of a well-water handed in during the interview.

The first step was to ascertain the oxidizing power of the water, which was to show the amount of oxidized organic matter contained in it. In this operation, the oxidizing agent used was permanganate of potassium, together with free sulphuric acid.

The next operation was to discover the amount of free ammonia, by which it was to be ascertained what proportion of surface water or ammoniacal matter (especially urine) there was in the sample. There was used in this discovery the Nessler solution, which is composed of iodine of calcium and potassium.

The third test was to ascertain the amount of chlorinated ammonia—this is, ammoniacal organic matter converted into free ammonia, in order that it might be measured. In this test, the water to be analyzed was mixed with a certain amount of

the chlorinated ammonia. The fourth step is the test, consisting the precipitation of chlorine, or ammonia salt. There is in all natural waters a certain proportion of salt; the proportion in our lake water is about 80 in a million. In soft water, there is none. Salt over and above the normal point, indicates an average; all salt we eat passes out in an unchanged condition, and presents all average in great proportion. If salt is in well water, it shows neighboring sewers and cesspools, or else distillate. This element is ascertained by a standard solution of nitrate of silver.

The fifth and last test indicates the amount of nitrous acid in the water—this shows fresh sewage, or nitrogenous organic matter, which is so fresh as to be only partly oxidized. This indicates privies not far distant. It is ascertained by iodide of potassium, starch and sulphuric acid; if any nitrates are present, the iodide will be sent free, and an iodide of starch is formed, which is of an intensely blue color.

The specimen being examined was from an East Canal street well, in daily use; it showed chlorine to the enormous extent of 680, and a few drops of the chemicals turned the clear, sparkling water into a dense purple, which Mr. SWENSON said partook of the quality of liquid manure, and would prove an excellent fertilizer. Some of the wells examined, ran up to 670 of chlorine, but in spite of this extraordinary and really alarming state of affairs, the salt could not be tasted, and the water was of a very clear and sparkling character—in fact, said Mr. SWENSON, some of the deadliest drinking waters are the clearest and most sparkling of any, because of the large percentage of nitrites found in them. The salt in water is seldom noticeable to the taste, at least of those who use it constantly, because they become used to it; occasionally a stranger can thus detect it, but the mere taste is not to be thought of as a test.

Mr. SWENSON continued his experiments, for the benefit of his reportorial visitor, showing the differences between the pure water of the Capitol well, and that from the average well that had been pronounced bad; the former was but slightly discolored in the chlorine test, showing a merely normal presence, while the latter was immediately turned to a pure milky color. Mr. SWENSON said he knew the Capitol well water so perfectly that he was not to be deceived, and the attempts thus far made he had immediately detected.

THE TIME NECESSARY

to make a test of well water varies, in Mr. SWENSON'S laboratory, from three or four minutes to half a day; if the water is very bad, he can detect it in a few minutes; if a complete analysis is sought for, it would take half a day, though he can conduct three such elaborate tests at one and the same time; ordinarily, however, about ten minutes is occupied in the operation. Each water analyzed is recorded in a book, with name of owner and location, condition of the water, and such remarks as to the sanitary condition of the neighborhood as may be elicited from the person who brings the water. About a quart of the fluid is necessary for all purposes of the analysis.

Mr. SWENSON says there are about one thousand wells in the city; those thus far examined are fairly representative, as to locality; he will continue at his laboratory for about two weeks longer, and in that time will be happy to receive all comers, free of charge.

When an analysis may be had at public expense, it is well for everyone to have it made; the trouble is almost nothing, and the degree of personal satisfaction very great. If you are drinking sewage in solution, under the impression that it is from a mineral spring, it is well to know it, and cease slowly poisoning yourself and family; if it is a good well, you will assuredly rest quieter if officially informed of the fact.

Local Weather Report—12 M.

SIGNAL SERVICE, U. S. ARMY.

OFFICE OF OBSERVATION.

MADISON, Wis., July 19, 1909.

At the U. S. Signal Office, yesterday, the highest temperature was 73 degrees; lowest, 59 degrees. The prevailing direction of the wind was east, with 15 miles per hour, at 3 P. M., as the highest velocity.

To-day, to-morrow, the temperature ranged from 59 degrees to 64 degrees, with east wind, increasing pressure, and cloudy weather.

The total movement of the atmosphere in the past twenty-four hours was 264 miles. Rainfall, 1.28 inches.

Time.	Bar.	Ther.	Hum.	Wind.		Weather
				Dir	Vel	
July 18.						
8:10 P. M.	30.87	71	85	ea	8	Fair.
10:10 P. M.	30.91	65	82	e	13	Cloudy.
July 19.						
5:10 A. M.	30.770	65	85	ea	13	L'y rain.
10:10 A. M.	30.841	61	83	e	14	Cloudy.

INDICATIONS.

WASHINGTON, July 19.—10:30 A. M.

Indications for the Upper Lake Region: Clear or partly cloudy weather, preceded by occasional rain; winds mostly northerly; stationary or lower temperatures; rising, preceded in eastern portion by stationary or falling barometer.

FUNERAL OF CAPTAIN GERBER—The obsequies of the late Capt. JOHN GERBER, yesterday, were of a most imposing character. The Governor's Guard, Madison Turn-Verein and Menomonee, followed by a long line of carriages, escorted the remains to Forest Hill, where Colonel WADSWORTH, speaker of the Turn-Verein, paid a most impressive tribute to the memory of the deceased, setting forth his numerous good qualities, both as a soldier and a citizen. When the Colonel concluded his address, the Menomonee sang a favorite song of the deceased's, which he presented to them some years since, and the Governor's Guard fired three volleys over the grave, in honor of the memory of a brave officer and soldier.

INCORPORATION—George HANSEN, DANIEL HANSEN and GEORGE HANSEN have filed articles of incorporation with the Secretary of State, constituting themselves a corporation under the Wisconsin Statute, to be known as the Wisconsin Dental College, located at Hudson.

San Antonio—The many friends of Mr. R. D. HARRIS, who long ago left the State, will be glad to learn that the