

ARTESIAN WELLS.

WHY THEY ARE SO CALLED—HOW THEY ARE MADE—EXPERIENCES IN CHICAGO.

Artesian Wells are so named from the ancient province of Artois, in France, where natural overflows of water were found. It is only about eighty years ago that much attention was paid to sinking them by machinery. In 1841, after eight years' work, a well was sunk at Grenelle, near Paris, 1,900 feet deep, which was then considered a great triumph of art. Spangler and Mars, who sunk nearly all the wells in Chicago, bored 2,900 feet at Columbus, Ohio, before they struck a good supply of water. The deepest well in the world is at the sugar refinery in St. Louis, but there is so much mineral in the water that it is only used for flushing the floors. This well is considerable over three thousand feet deep.

The first Artesian well sunk in Chicago was the one on Chicago Avenue, at the stone quarry. This was bored under the direct supervision of unseen spirits (?). They did the doing for the purpose of getting oil. When it would not yield oil they bored deeper for a brine spring, but were content at last to put up with a good yield of usefully good fresh water, that is said to have improved in quality in the last few years.

There are now more than twenty in and about the city. Our reporter visited one of these, now being bored at the corner of Franklin and Monroe streets, and gained the following information in conversation with the foreman of Spangler & Mars, who have taken the contract.

Reporter.—I want to learn how to make an artesian well. Can you tell me?

Foreman.—Oh yes; very easily. We must have power, so we have this strong derrick and steam engine. This derrick has been used a good many times before. We hitch a traveling crane to a beam fastened to the axle of the driving wheel of the engine, which will give us about forty-five down strokes a minute. To the other end of this beam we fasten the drill, which works in a swivel, so that the drill can be turned around easily. This is the drill you see, about 2 feet long, 4 1/2 inches wide and 2 inches thick, and looks like a very blunt chisel. This drill works up and down in the hole it makes, crushing the rock under it.

When the drill gets down about thirty feet we screw on another one of these long pipes, 36 feet long, and keep it working.

Reporter.—But the hole gets clogged up doesn't it?

Foreman.—Not so fast as you might think. We change the drill now—as we are going through limestone—once every three hours. In order to put in a sharp tool. The drill has made 8,100 strokes in that time, and we get about a half of sand.

Reporter.—How do you get the sand out of the hole?

Foreman.—With this sand pump. You see it is just like an old-fashioned wooden pump, with a valve in the bottom. We work the pump up and down, and the downward plunge opens the valve and allows the sand and water to be forced into the tube and the upward movement closes the valve so that in a short time the hole is entirely cleaned out, and all the sand is forced into the tube. The pump is then drawn up and emptied.

Reporter.—How fast do you go down?

Foreman.—About eight feet every 12 hours through this limestone, making 16 feet a day, as we work day and night. But when we come to the hard white sandstone like the stone used for making grindstones, we make much less headway, as the drill has to be taken out every 30 minutes, frequently, and a new one put in its place. You can see how even the limestone wears the iron, as this drill is polished smooth, and looks as if it was fine instead of iron.

Reporter.—What kind of borings do you find here in Chicago?

Foreman.—The first 100 feet is blue clay, and then comes 450 feet of limestone, followed by 250 feet of shale, a kind of soap stone, which is porous and allows a passage for water.

Reporter.—It must have been in that strata that Kimball struck water.

Foreman.—Probably, as his well is only 619 feet deep. Well, as I was saying, below the shale we come to 30 feet of sandstone, and then 30 feet of limestone again, with 25 feet of sandstone in which most of the water about Chicago has been found; and below this shale we find sandstone as far as any borings have been made. These are rough figures that vary a good deal in different wells, but they give the average pretty well.

Reporter.—How do you keep the bore perpendicular?

Foreman.—The dropping is of course as true as a plumb, but if any hard or round stone should turn the drill at all, that tendency is corrected by the "sides" in the first pole. This side is 30 feet above the drill, and is the same size as the pole. The first joint is the working one. It weighs about 900 pounds, and its weight is sufficient, by the incessant pounding and turning, to pulverize the hardest stone. If all the poles acted as one working joint it would far exceed them, but this side, about 2 feet long, allows the drill to rebound, and strikes the hard rock and takes a great strain off the pole. We are on our tenth pole now, having gone down 318 feet.

Reporter.—How much water do you expect a 4 1/2-inch bore will yield?

Foreman.—That will depend on the pressure. Probably 400 to 500 gallons a minute, enough, at any rate, to flood a floor or a roof in a minute or two. The Bank of England once flooded their dome and roof in two minutes, but I believe they have no artesian well.

Reporter.—What hindrance do you find in boring?

Foreman.—Caving in is one of the worst. When we strike a quicksand we must put a tube down the side of the bore to prevent the sand from clogging the drill. The well at the Chicago Alcohol Works has caved in twice by caving in, and as we frequently meet with boulders, as in the well at Humboldt Park. These are very hard and very trying on the tools. The caving in of the tools is another serious hindrance. Sometimes we break a drill every week, and then there is great delay in getting the broken tools out. Why, it took fifteen months to get the tools out of the deep well at Paris, but these things are managed much better here in America. We are not often delayed with these old stumps.

To be continued.

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