

AN OHIO NATURAL GAS WELL.

Our engraving shows the tubing of an Ohio gas well as it appears when just completed. The particular well from which our sketch was made is located in the back yard of a lot on Market Street, in the city of Tiffin, Ohio. The well was sunk by Mr. John Cox, 76 Mill Street, Tiffin, Ohio, and we are indebted to him for the following particulars: The well is 1,480 feet deep, and the gas pressure 400 pounds to the square inch. Through the top layer of earth an 8 inch wrought iron pipe is carried down and bedded a few feet in the first rock formation, which is lime rock. Boring is continued through this formation with a 6 inch hole and is also piped or cased with a 5½ inch wrought iron pipe down to and through the next formation, which is Niagara shale, to the Clinton rock. This large piping, or casing, is for the purpose of keeping out water from the future gas stratum. The boring is now continued through the Clinton, Hudson River shale, Utica black shale, to the Trenton. The gas stratum is found near the upper crust of the Trenton, and is a stratum of porous rock, similar in structure to a sponge. If the boring is continued into some of these strata, a stratum of oil-bearing sponge is found underneath, and a further boring is very likely to strike a salt water vein. The oil stratum is not universal, the salt water almost invariable.

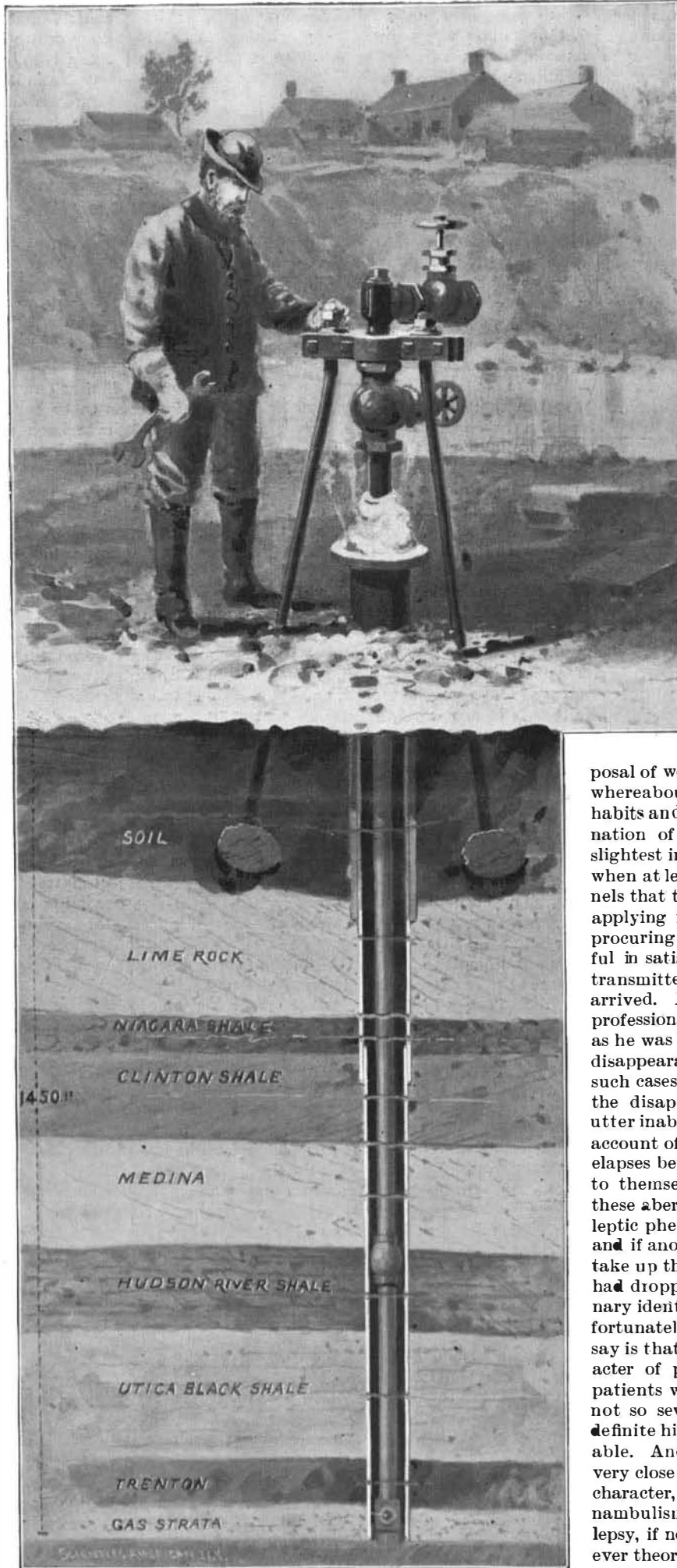
The strata of gas-yielding material run in a northeast and southwest direction, in veins of varying width, with intervening spaces of only solid rock, in which is no gas. These veins run from a few inches to 15 or 20 feet in width.

We read that "wells are shot." The boring may go close to a stratum and show a slight indication of gas, by percolation into the well. Knowing by the indications that the stratum is near, they lower tin cans or pails, with bails attached, by detachably hooked ropes, filled with nitroglycerine, one can on top of another, until they have about 50 to 75 quarts of nitroglycerine down. On the top of the last can lowered is placed an exploding cap, and an iron "go-devil," or piece of iron about 2 feet long, with slight fins on the sides, is then dropped in. The fall of 1,450 feet, the average depth of the wells here, explodes the glycerine, shatters the intervening rock, into the gas stratum. The first rush of gas is terrific in volume and noise. This soon subsides to a pressure that admits of lowering a 2 inch wrought tube to the bottom of the well, but this tube is interrupted in its continuity, at a point varying but about 50 feet from the bottom, by a slip joint and a rubber packing, 18 inches long, confined between two collars, one on the upper and the other on the lower sections of pipe. Gas can escape past the packing as well as through the pipe itself, until a downward pressure on the pipe at the surface, compresses the rubber and closes the hole at that point. The necessary compression is obtained by two side rods (shown in our engraving) attached to "dead men," or two logs, about 18 inches diameter, 10 to 12 feet long, and buried about 6 or 8 feet deep, one on each side of the well, and through which the rods pass, having a head, of course, on the lower side of the rods. The flow of gas is then under control by the globe valves, as shown, and from which the gas is conveyed by the usual pipes.

Photographing Soap Bubbles.

Lord Rayleigh, in delivering his second lecture at the Royal Institution, on March 9, gave an explanation of some of the methods he had recourse to when endeavoring to become acquainted with what, on account of rapidity of motion, would otherwise elude observation. The most obvious method of observing what was going on when changes were very rapid was, he said, to get an instantaneous picture. For this purpose the degree of "instantaneity" had to be varied considerably. By means of the magnesium flash, produced by blowing powder of magnesium into a flame, a brilliant light of great photographic qualities was generated. Although it occupied about the tenth part

of a second, and was instantaneous enough for babies and many other objects, it would not do for all purposes. The electric spark, however, served for almost anything that ever happened, as it could be reduced in duration below one-millionth part of a second, during which time there were not many things which could do much. This method might be turned to excellent account in all kinds of observations. He had used it himself in many cases when he did not know in the least what was going to be revealed. Many complicated phenomena moved so quickly that it was im-



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possible to know what took place, but by the light of the flash one could see what transpired at some particular moment, and that would often give the key to the enigma. He himself had photographed the breaking up of a soap bubble, a process which occupied between the two-hundredth and three-hundredth part of a second.

A STEEL cable one and one-half inches in diameter, traveling twelve miles an hour, can transmit nearly 2,000 horse-power.

Mysterious Disappearances.

A recent article by Dr. Osborne in the *Medico-Legal Journal* on "People who Drop Out of Sight" appears, says the *Lancet*, to afford food for thought, not only to the student, but even to the proverbial "man in the street." "The first case mentioned is that of a man, thrifty and industrious, prosperous in his business and exemplary in his family relations, who left his house one Sunday afternoon to have a short walk, being reminded by his wife as he went out not to be late for dinner, which was to be ready in a few minutes. He did not return, no trace of him could be found, and no reason for his disappearance was discovered when his affairs came to be wound up, as they had to be in the course of time. Two years later, in a shop in one of the Southern States of America, a man who had been known as an industrious, although taciturn, workman suddenly seemed to wake up and asked where he was and how he had got there. Gradually things came back to him; he remembered leaving his house in the North on a Sunday afternoon two years before, but everything that happened subsequently was as if it had not been. Nothing of his wanderings could be discovered further than that some months before he had appeared in the town in which he came to himself and had asked for and obtained work, which he had performed diligently and efficiently. He was restored to his family, and at the time the article was written had resumed his former life. Another and even more striking case is related—that of a lawyer, a well-known public man and politician, of more than usual ability and in a prominent social and professional position. One day, while in the midst of some intricate and important legal work, he stepped outside for a few minutes. He also disappeared. The most vigorous and thorough search failed to discover him, dead or alive. Streams and reservoirs were dragged, woods were searched and every means at the dis-

posal of wealth and influence were used to discover his whereabouts. He was known to be abstemious in his habits and happy in his home, and a searching examination of his business affairs failed to reveal the slightest irregularity in them. Several months passed, when at length word came through government channels that the missing man was in Australia and was applying for means of establishing his identity and procuring his transportation home. He was successful in satisfying his friends of his identity, money was transmitted to pay for his passage and in due time he arrived. After a short period of rest he resumed his professional work and has since continued to be just as he was before his sudden and quite unaccountable disappearance. It is an interesting question, How are such cases to be accounted for? The suddenness of the disappearance, the absence of motive and the utter inability of the patients to give even the slightest account of their experiences during the time which elapses between their disappearance and their coming to themselves, all give a certain weird character to these aberrations. Are they of the nature of post-epileptic phenomena? Are they lapses into an alter ego, and if another such lapse occurred would the patient take up the thread of this second existence where he had dropped it to resume his, what we may call, ordinary identity? These are interesting questions. Unfortunately, they are unanswerable. All that we can say is that these disappearances partake of the character of post-epileptic phenomena, and that in some patients who have suffered from lapses similar to, if not so severe as, those just described a more or less definite history of true fits of epilepsy has been obtainable. And another thing is also significant, viz., the very close resemblance that these attacks bear in their character, if not in their duration or severity, to somnambulism, while the relation which this bears to epilepsy, if not very definite, is certainly close. Yet whatever theory is put forward to explain such phenomena as those just referred to, they remain striking and mysterious, interesting in their psychological aspect, but in their concrete form full of practical and medico-legal difficulties."

PLANS have been made for connecting the cities of New York, Philadelphia, Baltimore and Washington by a trolley line. A road to connect Baltimore and Washington is now under way, and the same company has a charter permitting the extension of the road to the Pennsylvania line, where, according to the plans outlined, it will connect with a line to Philadelphia. The line from Jersey City to Newark is already in operation.