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“Some Particulars of an Artesian Well Bored through the Oolitic Rocks at Bourn, Lincolnshire, in 1856.”

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THE subject of artesian-wells is not without interest to the engineer, whose attention is chiefly directed to the supply of towns and other places with water. For this reason, the description of a small but productive artesian-well, completed at Bourn in Lincolnshire in 1856, is presented. The well was intended to supply the town of Bourn with water, the undertaking being in the hands of a small joint-stock company. The town had been until then, without any public supply, and almost without a private one. The wells were shallow, as in most of the towns in that part of the county; but many houses were wholly dependent upon carts, which fetched water from a considerable distance. These circumstances gave increased importance to the fact of such a supply being found under the site of the place.

The boring, 4 inches in diameter, passed through several oolitic strata, to a depth of 92 feet. Below the alluvial soil and gravel, a hard shelly limestone, 32 feet in thickness, was encountered. The bore-hole here was made slightly conical to admit of the taper end of a cast-iron pipe being inserted and driven tightly, to exclude any surface-water, and to prevent water from the bore escaping into the gravel, and thus lose its full power to rise above the surface. The boring was then continued, through various beds, till it reached a stratum, 6 feet thick, of compact and hard rock, in passing through which, at 92 feet below the surface, the tool fell suddenly about 2 feet, evidently into a chasm or hollow, striking upon the hard surface of the underlying rock. The water immediately rushed up with great force, and drove the men from their work; and it was not without difficulty that the joints for attaching the curved pipe and sluice-valve at the surface could be accomplished.

The site of the town of Bourn partakes of the ordinary character of the county, and is flat; the highest part, where the well is situated, being only about 6 feet above the general level. It had been the intention of the Author, should the water rise with

sufficient force, as he believed it would do, to supply the town direct from the boring, and in this way the work was carried out, the flow and pressure having proved even greater than was anticipated.

An air-chamber was fixed at the well to regulate the pressure, and to equalise the supply of water to the town. The water rose at the Town Hall exactly 39 feet 9 inches above the ground. The yield at the bore and surface-level, ascertained by filling a tank capable of containing 5,000 gallons, was at the rate of 567,000 gallons per day, and there was no diminution on letting the whole run continuously to waste. The yield was also tested by a "notch-board," which, by using the coefficient 0.563, and measuring at still-water and not at the "crest," gave 575,201.8 gallons.

The Author knows of no other boring of like dimensions, either in this country or on the Continent, which yields so large a quantity of water, or where, the boring being made on the general level of the surrounding district, the water from which flows to so great a height above the ground.

It is needless to say that the town of Bourn has since enjoyed an unlimited supply of pure water without the assistance of engine, pumps, or reservoirs, and in far greater quantity than it requires. The town of Spalding, several miles distant, has subsequently been supplied from the same source, the water being conveyed by pipes laid under the turnpike road.

The water-mains were laid under every street, with fire-cocks at intervals, and it was satisfactory to all, and surprising to some, to see the water thrown upon the roofs of houses by a hose and jet-pipe, as from a fire-engine, and that only by the natural pressure of the spring.

The water, by Professor Brand's test, gave 19.4 degrees of hardness, arising chiefly from the presence of bi-carbonate of lime; but by boiling it is rendered much softer.