

other countries more commonly of metal. It frequently happens that, after passing through hundreds of feet of retentive soils, a water-bearing stratum is at length pierced, when the fluid immediately ascends to the surface and flows over. The first rush of the water up the tube is often violent, so that for a time the water plays like a fountain, and then, sinking, continues to flow over tranquilly, or sometimes remains stationary at a certain depth below the orifice of the well. This spouting of the water in the first instance is probably owing to the disengagement of air and carbonic acid gas, for both of these have been seen to bubble up with the water.*

At Sheerness, at the mouth of the Thames, a well was bored on a low tongue of land near the sea, through 300 feet of the blue clay of London, below which a bed of sand and pebbles was entered, belonging, doubtless, to the plastic clay formation: when this stratum was pierced, the water burst up with impetuosity, and filled the well. By another perforation at the same place, the water was found at the depth of 328 feet below the surface clay; it first rose rapidly to the height of 189 feet, and then, in the course of a few hours, ascended to an elevation of eight feet above the level of the ground. In 1824 a well was dug at Fulham, near the Thames, at the Bishop of London's, to the depth of 317 feet, which, after traversing the tertiary strata, was continued through 67 feet of chalk. The water immediately rose to the surface, and the discharge was above 50 gallons per minute. In the garden of the Horticultural Society at Chiswick, the borings passed through 19 feet of gravel, $242\frac{1}{2}$ feet of clay and loam, and $67\frac{1}{2}$ feet of chalk, and the water then rose to the surface from a depth of 329 feet.† At the Duke of Northumberland's, above Chiswick, the borings were carried to the extraordinary depth of 620 feet, so as to enter the chalk, when a considerable volume of water was obtained, which rose four feet above the surface of the ground. In a well of Mr. Brooks, at Hammersmith, the rush of water from a depth of 360 feet was so great, as to inundate several buildings and do considerable damage; and at Tooting, a sufficient stream was obtained to turn a wheel, and raise the water to the upper stories of the houses.‡ In the last of three wells bored through the chalk, at Tours, to the depth of several hundred feet, the water rose 32 feet above the level of the soil, and the discharge amounted to 300 cubic yards of water every twenty-four hours.§

Excavations have been made in the same way to the depth of 800, and even 1200 feet, in France (the latter at Toulouse), and without success.|| By way of experiment, the sinking of a well was commenced at Paris in 1834, which had reached, in November, 1839, a depth of more than 1600 English feet, and yet no water ascended to the surface. The government were persuaded by M. Arago, to persevere, if necessary, to the depth of more than 2000 feet; but when

* Consult Héricart de Thury's work on "Puits Forés."

† Sabine, Journ. of Sci. No. xxxiii. p. 72. 1824.

‡ Héricart de Thury, p. 49.

§ Bull. de la Soc. Géol. de France, tom. iii. p. 194.

|| Id. tom. ii. p. 272.