BRICK LINED WELLS by Roly Wyatt

The term well is generally accepted as a hole in the ground used to locate and abstract a liquid or gas. We are looking at a well as a means of obtaining water. A bored well, normally now referred to as a borehole is used as a means of abstracting water but this paper is exclusively looking at the construction of a dug well, lined with brick as was used throughout the centuries until technology took over. This is a hole in the ground constructed by pick and shovel large enough for a man to work in with reasonable comfort. For this reason, and to store a quantity of water the diameter would be around 3ft 6inches to 4 ft. The principle of a well is to allow the water to seep in over a period and for that water to be stored ready for use. Therefore the walls of the well must be porous. Constructing the well was a skilled job and as transport in the days before railways and cars was difficult the practice built up for each village to have its well sinker within easy distance for a horse and cart.

The well sinker would first dig a hole about 4ft 6inches diameter and as deep as was safe for working. This would hinge around the nature of the ground. When it was considered that a supporting wall was needed a circular wood rim would be placed in the bottom of the hole. This had the appearance of the rim of a cart wheel, possibly held together with an iron hoop or with iron brackets holding the separate pieces of wood which comprised the rim. There could be no spokes as the well sinker needed to excavate as the well was sunk. A course of bricks was then laid on the rim, lengthwise along the circumference so that each brick touched its neighbour but without any mortar in the joints. The aim would be complete the circle using full bricks so the position of the bricks relative to wood rim may have to be moved when the last few bricks were added. When that first course was complete the second course was laid with the joints offset and that process would be continued until the bricks were some couple of feet above the surface. Depending upon the working depth the work may have been done from a ladder although in practice most well sinkers would start the brickwork while it was possible to see out of the well without any ladder or platform. This would be done in the interest of safety. The well sinker now constructs a derrick over the well, normally posts lashed where they met leaving a loop below the lashing to which a pulley was fastened. A rope was then fed over the pulley to a winding barrel lashed between two of the posts. All was now set to continue the sinking of the well, access being by ladder and by climbing over the low wall projecting above the ground. The well sinker would return to the bottom of the well and a large bucket lowered to him on the rope. He would then dig a spit depth in the centre of the bottom of the well, gradually increasing the diameter of the dug hole until he was taking spoil from below the wooden rim. In doing so the weight of the bricks above would push the rim down and he would continue until the top of the brick lining reached ground level. He would then climb out of the well and lay a few more courses on the top before returning down the well to start the next dig. He would be assisted in all this by an unskilled person who would wind the full buckets out of the well, empty them into a wheel barrow and take the spoil away as necessary. It would also be his job to cart some bricks to the well side ready for his employer to lay on the top of the well

lining. This was always referred to as unskilled work but having worked in the bottom of a well myself I have always been aware of the risk of someone at the top dropping tools etc on those below so the surface worker had to be a careful soul.

The sinking process would continue until water started to enter the well through the unjointed brickwork. This water would be removed using the spoil bucket, the well sinker working in the wet conditions. When he found the water was entering the well at such a rate that he could not continue to work then he would regard the well as sufficiently deep, bearing in mind that the water from most hand dug wells would be drawn by a bucket on a rope. Some refinements would be needed, in particular the top few feet of the lining would have been laid with mortar joints to prevent, or at least inhibit, the inflow of surface water. Due to the limited space available around most middle ages houses there was always the risk of pollution from nearby earth closets. Finally the lining would be extended about three feet above the surface and a hand windlass mounted on the wall to make it easy to draw the water. Some wells were tastefully finished with ornamental roofs and decorative ironwork. These are few and far between in this country but have been preserved in France and Belgium and sometime one can find some really ingenious pumping systems which could have used either man power or horse power.

I have been asked why unjointed brick linings do not collapse. This is due to simple mathematics, a perfect circle of loose bricks if subjected to an even pressure all round the circle will merely press the bricks together making it firmer and stronger. Hence a well is as good as the well sinkers craft but even that can be sabotaged by uneven pressures from strata changes outside the well. Fairly early in my working as a water engineer and I suspect as part of my initiation to working below ground I was asked to give my opinion on a well in Staffordshire and my working colleagues lowered me down the well on a seat. About 8 ft below the surface I was horrified to see a bulge on the well lining with dirty water dripping through it. I told my colleagues that I had seen enough and please wind me out of the well. That client was advised to fill in the well, for the sake of the safety of the people who lived there and to avoid risk to the house which was close to the well. Wells were often inside old houses and there was one instance in Whitchurch where a resident was walking through his back kitchen when a brick disappeared below his feet and he heard it splash when it reached the water. That well was about twenty feet deep, had been covered many years before with heavy wood sleepers and the brick floor laid over the top. Later occupants had no idea that it was there. When one remembers that in 1878 there were 800 wells in Whitchurch, most of which were just abandoned when mains water became available so there is the thought as to where any still exist. Most were very shallow and probably polluted and it is likely they became a convenient place for the disposal of domestic rubbish.

Well sinking was a dangerous occupation but there were remarkably few accidents in the building. Usually those were to people who decided to dig their own well without the benefit of experience. More recently there have been accidents caused by gas in wells and there is now legislation which means that anyone working down a well must wear a harness attached by rope to a winding winch on the surface and there must be sufficient staff on the surface to safely raise someone from the well even if unconscious. There have been cases of people and animals falling down wells but by definition most wells are fairly shallow and contain water so the landing is soft. Which brings me back to the definition of a well, particularly the diameter. With a diameter of 3ft or so it is possible to support oneself with the feet against the well wall on one side and the shoulders against the other side, indeed it has been known for someone to climb out using this method. I have never fallen down a well and the nearest I came to it was when the manhole frame gave way as I walked across it. I jammed in the hole in the well cover but my one foot was in water so I could only have fallen a few feet. The deepest well I have been down was 90 ft at Uttoxeter and then I was nervous but that was because the well was about 8ft diameter which made me feel vulnerable as the only access was down a ladder fastened to the well wall. I never did like ladders, I would prefer to go underground than go up a ladder on a building.

Finally, my knowledge of well sinking with brick linings is hearsay and I have only once met a man who had personal experience of brick well sinking. By the time I joined the company boreholes were predominantly used and any wells sunk used concrete tubes as liners.

Prepared July 2015