

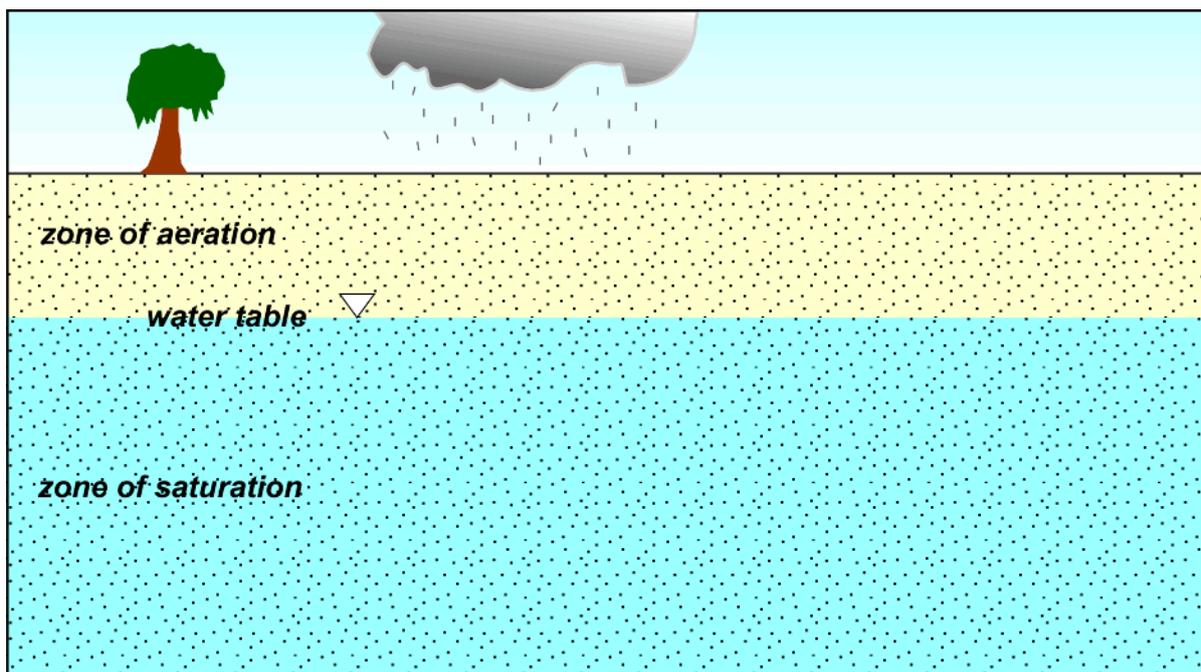
Life with a Vintage Deep Well Pump

I had been doing an Agricultural Engineering course up near Swindon in Wiltshire which was two year's full time and one year's practical.

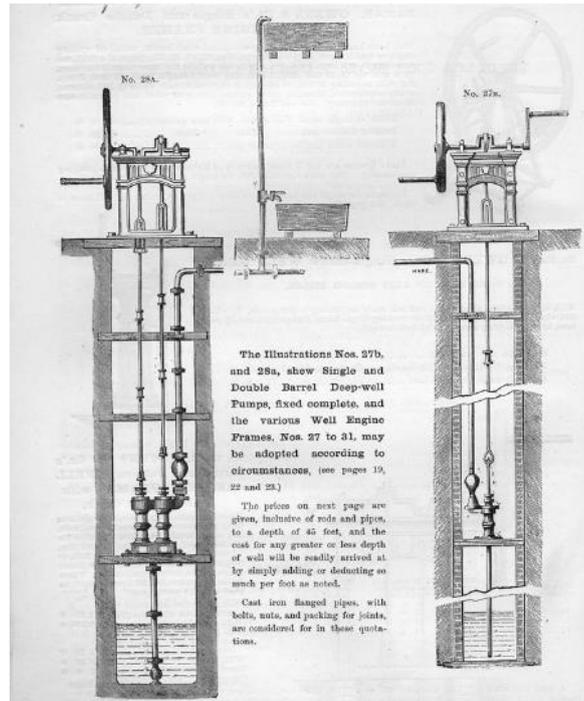
The practical element consisted of working with an approved firm of Agricultural Engineers, literally going round all the farms in East Dorset repairing whatever needed repairing. Looking back, it was without doubt the best training a young lad could have had as there is very little I can't fix.

There was nothing on a farm that we did not fix, be it a steam engine, tractor, combine, milking machines and of course assorted pumps. Many farms around that time (early 1960s) did not have mains water on the farm and relied on the pumps for all their needs. So thus it came about that I had to learn about these things and it was always a rush to get them fixed.

Let's decide what constitutes a Deep Well pump. The average pump that used to be in the village square could not, with the best will in the world, lift (suck) water more than 25-28ft, probably a lot less because the seals were not much good. So if the water table, which is where the water level saturates the ground below the surface is any deeper, you have a need for a deep well pump.



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There are many different ways to do this. You can put the pump barrel(s) down the well nearer the 25ft mark and then push the water up to the surface, or as I'll describe here you can put the pump barrel under the water and lift the water out.

With this method there is no need for anyone to go down the well to work on the pump with all the inherent dangers of suffocation.

If you ever need to remove a pump from a well NEVER go down the well as it might be full of CO2 and you will die.

I was attached to the chap who did most of the 'water works' for the firm and we could call up others if we needed some heavy lifting. His experience was legendary even back then. We used to go out to the farms in a Ford Thames 4D loaded down with shear legs, chain blocks and lord knows what.

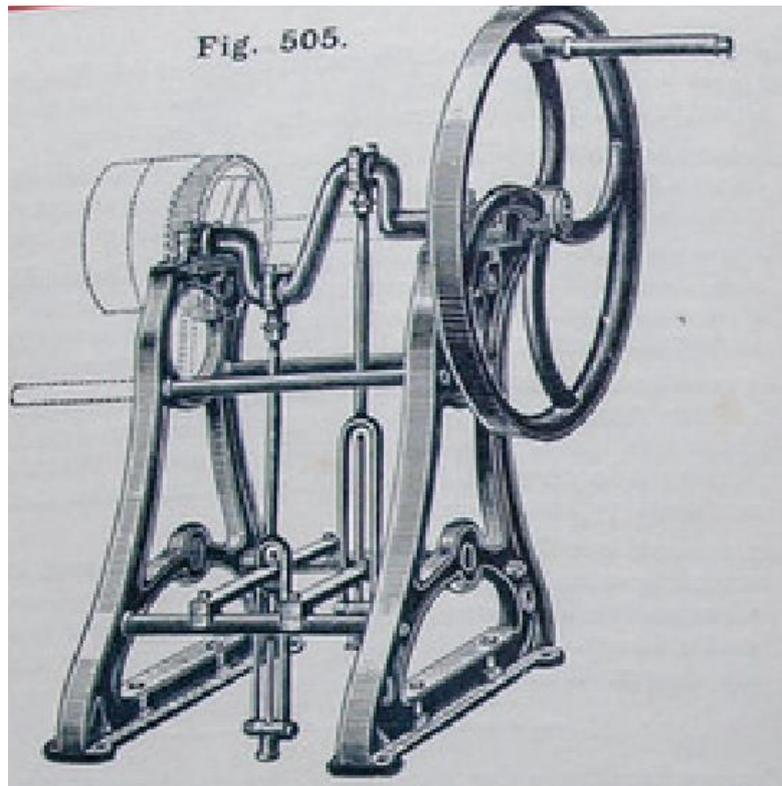


Having got to site, the first thing was to try the pump in case there was something other than the fact it would not pump. There were a number of issues that used to crop up, such as leaking piston rod seals, failed bearings on the crank unit or just old age. These pumps were a good old age even when I was working on them.

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The next thing we often had to do was take the roof off the pump house. This was so we could put up the three shear legs over the top of the well. You had to have sufficient height to pull out the piston rods, which might be over 12ft long, plus some extra lift as well.

Assuming the pump did not pump we then had to pull it up and it could just have been that the leather piston rod seals had worn out. Literally a day's work for a 10 minute job. There was no way to fix that unless you pulled all the rods out of the casing, which is the tube that went to the bottom of the well.



Above is a typical two piston crank frame that could use a belt or manual drive. Again, there were many variations.

The first job was to rig a long chain block from the shear legs and lift the crank out of the way, disconnecting the link to the piston, the gears and the bearing caps. You were then left with the piston rod on its own sticking out of the top of the stuffing gland. It could not drop down the well at this stage. We then connected the chain to the top of the rod with an adaptor bracket. Having removed the bolts round the top of the casing we could raise up the first rod and stuffing gland as one.

A word about the rods. These would vary in length and size depending on how deep the well was. They were usually made of pine and rectangular in section, say about 3" x 2" and were joined one to the other by metal plates both sides and several bolts through each rod. These were often very hard to undo as we didn't run to stainless.

You always removed the upper set of bolts as the joining plates stayed on the lower rod.

As you have to pull it up in sections, it's necessary to disconnect each section in turn. To do this we pulled the joint between two sections clear of the well head and fixed a

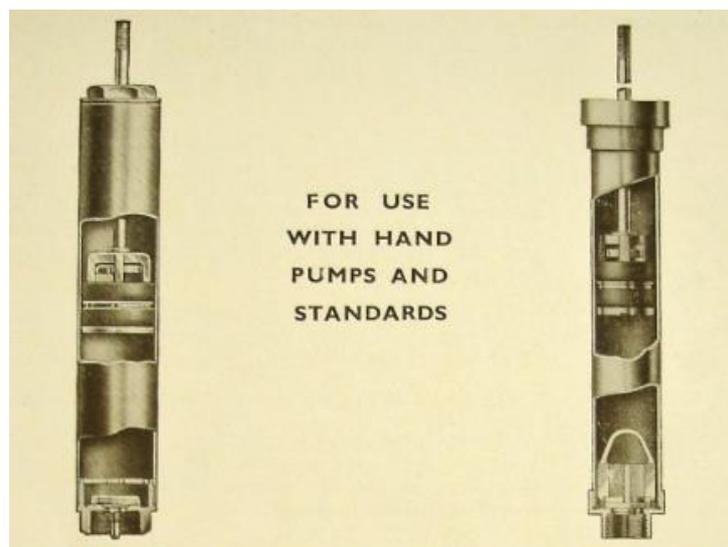
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special clamp tight round the rod so it butted up under the bottom of the lower joining plate; this was absolutely vital if you wanted to avoid dropping the rods down the well. We had loads of clamps as we did not remove them till we put the rods back. The clamps were long enough so they could sit across the top of the casing and be able to attach the chain hoist.

It was then a bit of a repetitive (slow) game to keep pulling up and disconnecting till the piston appeared. Always remember to cover the casing in case you drop a spanner down!!

The piston was usually brass with a leather cup seal on the outside and a big metal ball like a billiard ball, which was the valve. It often resembled a stirrup with the ball in the middle. Often it was just a bit of muck under the ball that would stop it pumping. We always fitted new seals as a matter of course.

There were a number of variations depending on the manufacturer, some having two leather cup seals. The valve arrangements also used to vary as some had a 'plate' valve as opposed to a ball. See below:



The seals had to be a good fit and made of good materials, and we always soaked them in neatsfoot oil, which made them supple and prolonged the life. I'm sure that some modern materials would outlast leather, but I have never looked into them.

The valve at the bottom of the casing could also get stuck or jammed open, and that really could be a problem.

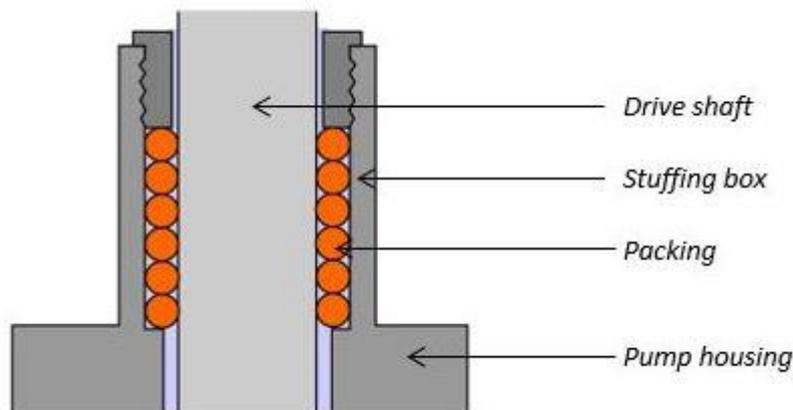
Again, there were two options. There was a method by which you could pull the fixed valve in the bottom of the cylinder up the bore, which is great for servicing. Unfortunately, I never came across one of these so I'm not sure how you actually get hold of it to pull it up and then get it back down again since it has to be seated properly.

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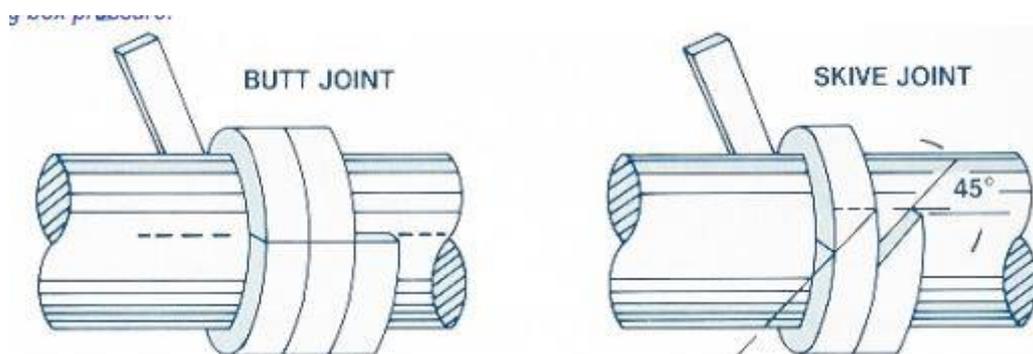
In our case, all the ones I used to work on, we had to pull up the whole of the casing. This entailed either unscrewing each section with 36" chain tongs or unbolting the flange joints between sections. Either way it was very hard work. Care had to be taken not to drop the tubes down the well. Once again, we used a series of clamps.

Having pulled it all up, I have found it just to be jammed with sand. Incredibly frustrating.

Finally, you got to where it was all back down except the top stuffing gland. This is also known as the rod seal. Again, we always used to change that as well. The seal material is still much the same today and you fitted a number of rings into the gland and tightened the nut. The seal



Above is a typical packing gland; they have hardly changed over the years. The number of rings is determined by the manufacturer. Note that they are rings, not a spiral, even if the material comes in a roll. The screwed nut or bolts at the top should NEVER be clamped down hard but gradually 'nipped' up and allowed to bed in. Note that these glands will never be 100% water tight.



Above is how to cut a packing ring. You can do either a straight or skive joint. Make sure the gap is minimal and stagger the joints round the bore.

Never cut the material on the piston rod, but use something the same size or you will score the brass rod and it will leak.

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Lastly you put the stuffing gland and piston rod back on, properly sealed to the casing. As the water is lifted up inside the casing, probably up to a good few feet higher than the pump, it needs to be sealed.

The final job is to put the crank system back and connect the motor.

I have come across virtually every kind of motor from a gas engine (not petrol, but real gas), ancient Lister 1½ HP hopper cooled and other dot-and-carry-one single cylinder motors, lethal looking 1920's electric motors, even the odd car engine, you name it. Farmers are incredibly inventive. I think the modern elf'n safety guys would have a coronary. It makes you wonder how we all survived, but we did and probably a lot better than today.

I am not certain if any of my old pumps still exist, but knowing how slowly things change in Dorset I would not be surprised if some have simply just been abandoned and remain complete.

Two that spring to mind are at Crichel Estate near Cranborne and The Blue Pool near Corfe Castle. This is a beautiful place to visit and until quite recently has been in the same ownership for many, many years. I'll put my money on that one.

Mike Curtis
June 2021