

essentially the same as a single, but having a greater overall width. Such gates are often secured by an iron loop, overlapping the toes of the two gates, being bolted to one and dropping over the second.

Unless gates are intended for a particular field, they are often made in numbers to standard sizes, during off-times. Traditionally, gates have always been made of oak, originally cleft, but latterly sawn, though one often comes across a cleft gate. They are untreated and unpainted, except in one or two areas such as West Pembrokeshire, where gates, ladders, farm doors and gambos are all painted orange. Some gates are now being made of soft wood, which must be creosoted.

WATER-PUMPS

Before they eventually turned to iron as a material, village pumps, the pumps in farmyard and cottage garden, were made of elm, as were the drain-pipes in the cities. They always had made them of elm, ever since men first applied the principle of raising water past one-way valves, by leverage or wheel. The vertical pipes of these pumps and the horizontal drainage pipes were fitted together by a water-tight conical joint, sealed with hot mutton suet. Most pumps were made in two sections, one above the other, and their meeting edges were coned to fit, the lower within the upper. The lower pipe had a two-inch bore and the upper one had a five inch, to accommodate the bucket.

They always looked for a good, clean butt of elm, clear of side branches, and boring commenced as soon as the tree had been thrown—or felled, or felled. Elm, the best wood for continuous immersion in water, will last far longer when bored in the sap condition. If it is left until after seasoning, cracks appear, which though of no account in structural work, would, of course, be disastrous for pipe work. At one time they squared the butt with adzes, but later they did

this over a saw-pit. Squaring the butt provided stable baulk, and a clean face on which the line of the bore could be marked out with accuracy along two sides and the ends. The butt was raised on trestles and securely dog-spiked, on a slightly inclined plane, so that the 15 ft auger, set in line with the chalk-line centrings would have its handle set at a convenient working height.

Augers designed to bore parallel holes were of two kinds, the nose and the screw. The nose auger had to be 'started' by a 'centre' being made in the end face of the butt, with gouge and mallet, but once started would follow a straight line all the way, irrespective of any variation in the grain. On the other hand, while the screw auger would 'start' itself, its screw point tended to follow the grain. Any attempt to bore a 10 ft hole with a screw auger would have failed. The 15 ft shaft of the auger was mounted on its own horse and much preparation was necessary to 'sight' it with the chalk lines. Both the trestles and the horse were therefore made to massive proportions. Once the auger and lines had been correctly aligned, boring could commence.

The 5 ft handle gave a very good leverage, but it was a decided advantage to have two men on this long and arduous job. Every so often the auger head, was withdrawn, bringing with it an accumulation of shavings. Everything depended henceforth on accurate setting and once the head of the auger had disappeared in the depths of the butt there was no correction of any error. Each butt was bored from opposite ends, which met half-way with a tell-tale 'give' as the auger-head went through to the opposite bore. Like the men who bore tunnels, the meetings were never more than a trifle out. The top half of the pump had an initial boring of 2 in. diameter, and this was enlarged to 5 in., in two stages, the intermediate being about $3\frac{1}{2}$ in. This enlargement was made with tapered auger-heads, and to provide for these changes the heads were made detachable from the shaft.

Near the top of the upper pipe a tapered hole for the elm

spout was made and on the opposite side a slot for the handle was made. The lower half had a series of holes—small enough to keep out frogs—driven in above the sill-line. At the top of the lower half, inside its junction with the top, a one-way valve was placed. The bucket, likewise of elm, was made to a very close fit within the 5 in. bore. The water drawn through its centre was captured by a leather flange and retained by means of a lead clack. The bucket was turned to shape on a lathe and finished with chisels.

Positioning and erection of a pump was always carried out when the well was low. When all construction was complete and all the iron-work made by the blacksmith was fitted together, the pump was given an initial priming, and then, if it drew water which then died away to a trickle, all was well; but if during pumping the water stopped, then there was something wrong. In fact, the work was done methodically and with such care that such a thing rarely occurred.

The depth of these wells naturally varied, depending on the source of water, but unless the well exceeded about 20 ft, the pump was made in two parts, as described. But if the depth exceeded 20 ft, then the pump was made in three lengths, with the two lower ones identical in bore. In Shropshire these pipe-lengths are called 'trees'. It was not uncommon, in those parts where the elm flourished in numbers, for a tree to be selected from the farm-land itself, and so there was many a farm which had provided the timber for its pumps. The pump was a utilitarian piece of machinery, but that did not preclude some ornament on the 'jowl' which contained the fulcrum of the handle, which in turn often had some slight elaboration made by the blacksmith. It should be noted that a wooden pump or pipe was not subject to freezing during winter.

LADDERS

The man at the top of a fifty-rung ladder, or higher still at