



## THE GAOL (JAIL)

The Gaol, which is the true Dungeon at Warwick Castle, has been in place almost certainly as long as the great tower above it.

Caesar's Tower would have been used for accommodation and to house noble prisoners captured in battle, who would be treated according to their station whilst awaiting the payment of their ransom.

Below ground in the Gaol however it was a different matter for the poor unfortunates imprisoned within it's walls. Within this cold, dark place they would have had little food and would certainly have endured torture and beatings from their jailors. Around the walls of the dungeon can be found graffiti scratched into the stone by prisoners some from the 14th and 15th Centuries possibly captured in battle during the hundred years war, other graffiti can be found put there by Royalist prisoners captured during the English civil wars. The civil war is the last recorded period that the Warwick castle Gaol was used.

Probably the most gruesome aspect of the Gaol is it's oubliette. This is a small grated pit barely large enough for a man to stand up in. The word oubliette comes from the French verb oublier, which means to forget. If you were condemned to the oubliette you were likely to be forgotten and destined to a slow agonising death.

It is likely to be no coincidence that the religious graffiti in this area of the dungeon is close to the only light source. Imprisoned down here you would have had little hope, only God. One has to wonder if the prisoners have created an Alter to God down here.





## THE WATER MILL

A water mill has been sited on the south side of the castle, next to the river Avon since the late 14th century, originally used to grind corn for use in the castle kitchens but also for local farmers (at a charge of course). During the 17th century an engine house was built. Initially it was likely that the Avon River would have provided the power via the water wheel but, as the Industrial Revolution continued, it is likely that water would have been coupled with the new power of steam. The wheel would have been used for pumping water into the castle. However often at this time water wheels would also be used to drive saw mills, so it is possible that this may have also been the case at Warwick. It is certainly the case that it powered a metalworking lathe as one can be found in the water turbine room.

In 1884 an electricity generating plant was installed which supplied electricity in the form of direct current to the castle until 1940, when the castle was connected to the National Grid. The plant was abandoned completely in 1954.

In 2002 Warwick Castle invested £2 million on restoration of the Mill and engine house in order to open it to the public.



## THE BATTERY

The accumulator batteries in this room would have been used to ensure that the castle received electricity 24/7. They also acted as a way to ensure that the electricity supply to the castle was smooth and constant and did not cause the lights to flicker. They were charged during the day by the dynamos. Each battery held a charge of 2 volts and a bank of fifty was required to supply the hundred volts needed to power the 475 lights in the castle.





## THE WATER PUMP

The 25 HP electrically powered water pump in the mill and engine house replaced the original water powered pump which supplied water to the castle. It features one of the most useful and innovative inventions of the Victorian era; A hydraulic accumulator. The Hydraulic Accumulator:

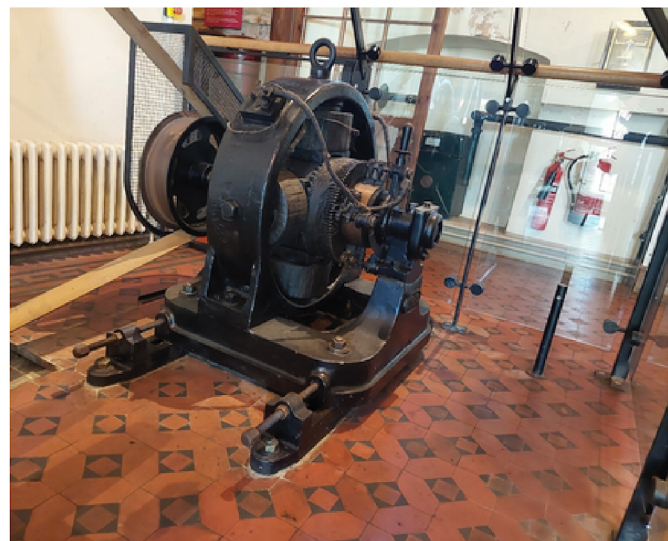
is a device where water or other liquid can be stored under pressure and then released in a controlled fashion by way of a series of valves. In this way a relatively low power engine can produce a huge amount of power output. At Warwick castle the accumulator was used purely as a way to produce a constant and regulated water supply to the castle. However the device had a multitude of uses from cranes to lift operation. Perhaps the most famous use of accumulators in Victorian times was in the raising and lowering of the roadway of Tower Bridge. Accumulators are still in use today and the basic design is little different to the original invention of William George Armstrong in 1850.



## THE DYNAMO

The dynamo was the first electrical generation device capable of generating enough electrical power for industrial use. In its simplest form a dynamo consists of a series of fixed or electro magnets, known as a stator, which surround a set of rotating windings known as an armature. As the armature turns and passes through the magnetic field of the stator a process known as induction takes place and an electrical current is formed which passes through wires to be distributed.

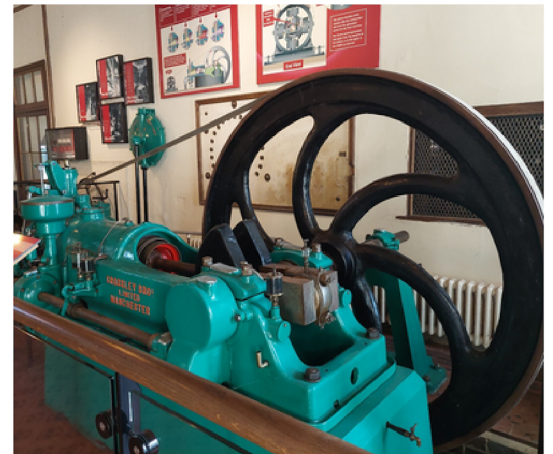
Simple though it sounds, compared to an alternating generator which went on to replace it a dynamo was a complex machine and would likely have caused Mathew Bissel, the castle's engineer, a number of headaches during it's lifetime.





## THE ENGINES

There are two types of engine in the mill, both from the same company, Crossley. One is a gas engine which connected to the mains gas supply would have worked on internal combustion. The second type is an early form of diesel engine.



## THE TURBINE

Initially the water power in the engine house would have been supplied via the water wheel. However, once more, the technology of the industrial revolution stepped in with the invention of the water turbine. This was a much more efficient system of hydro power transfer, which means that it could be built very much smaller but with a greater power output. The turbine would have been connected to it's own dynamo.



## THE REGULATOR

Output from the various generating devices would have varied widely. Without a system to control these fluctuations in the power output, things would have been quite uncomfortable for the occupants of the castle. At best the lights would have constantly flickered and at worst sensitive and valuable equipment might have burnt out with the attendant fire risk and cost of replacement. Therefore a voltage regulator needs to be part of any electrical generating system, in order to keep voltages within a prescribed range that can be tolerated by the electrical equipment using that voltage

