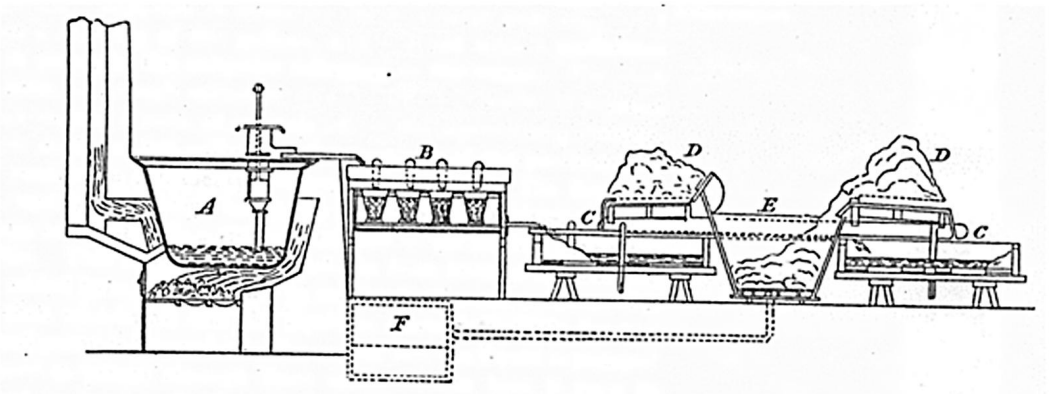
A large iron pot

Outside building A201 - the Mixing House, which is adjacent to the Library and opposite Walton House, you will see a large iron vessel, but what is it and what was it used for? The answer is that it was a component part of a process for the refinement of saltpetre, one of the three ingredients of gunpowder. Much of the saltpetre used at Waltham Abbey was imported from India, always containing a considerable amount of impurity and requiring to be refined before use.



The diagram shows that process and the large iron pot is A. This has a capacity of some 500 gallons and it is fitted with a perforated false bottom which prevented the saltpetre from adhering to the vessel. About 25 hundredweight of crude saltpetre was loaded into A, to which was added 280 gallons of liquid recovered from the purification process. A fire was lit under the vessel and in two hours the liquid boiled and the saltpetre dissolved into the liquid. Just before it boiled a thick scum rose to the surface consisting mainly of impurities. This was skimmed off and cold water was added to induce fresh scum to form, this also being removed. The fire was then withdrawn and the liquid was allowed to settle for two hours. Thereafter a hand pump was lowered into the vessel and the liquid pumped into a series of filters B, where it passed through linen cloth. From here it ran into shallow copper crystallizing troughs C. As it cooled down the liquid was kept stirred in order to make the saltpetre separate into small crystals which did not contain as much liquid as large ones. The saltpetre “flour” as it formed was drawn up on to an inclined draining

platform D, and from there it passed to a washing vat E. After the temperature had fallen to about 32°C (90°F) the solution was no longer stirred and any crystals that formed after that were treated as crude saltpetre for subsequent refinement. The washing vat E was about 6 feet long by 4 feet wide and 3 feet 6 inches deep. It was fitted with a false bottom made of wood with small holes bored in it. Below the false bottom was a plug which could be removed to allow the washings to flow away. First the charge was washed with 70 gallons of water sprinkled over it by means of a rose, the plug being left out so that the washings could drain away to a liquor tank F. After draining for half an hour the plug was inserted and the saltpetre was covered in fresh water, which, after standing for half an hour, was also allowed to drain into F. Finally the salt was washed with 100 gallons of water, the plug remaining out. The saltpetre was then allowed to drain overnight and it was then taken to a storehouse to dry out. After three days the moisture content had fallen to between 3 and 5 percent. The liquor recovered from the various stages of the process was boiled down to a quarter of their original volume. The solution was filtered and allowed to crystallize. The crystals generated in this way were treated as rough saltpetre which could be subsequently used as feedstock. The overall refinement process was originally developed at Waltham Abbey but was adopted in France, Germany and elsewhere using substantially the same equipment configuration.

Geoff Hooper