ROYAL GUNPOWDER MILLS

WALTHAM ABBEY

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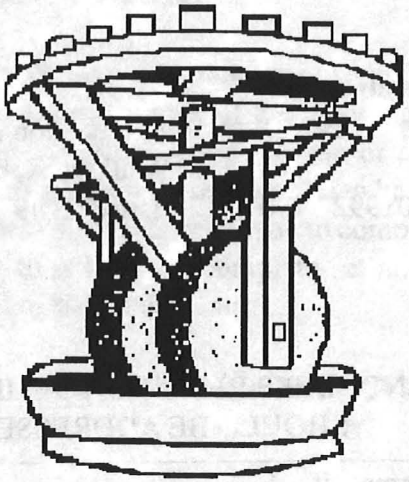
Touchpaper

The Newsletter of the
ROYAL GUNPOWDER MILLS WALTHAM ABBEY

FRIENDS ASSOCIATION



DECEMBER
2002

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PLEASE NOTE: Deadline date for submissions to the next issue is 15th February 2003

EDITORIAL

This issue brings you the latest news on the situation at the Gunpowder Mills which has suffered from the same financial problems as many other museums and attractions over the past year. We have every expectation that the site still has a future but some hard decisions have had to taken at this time.

We also include the second part in Les Tucker's latest venture describing some of the more significant structures on site which, for one reason or another are not 'listed'. Once again these articles can be removed from the centre of Touchpaper for you to compile if you wish. We hope to collate the complete set and publish as a separate booklet in due course.

Wishing you all a Merry Christmas and a Happy New Year

Norman Paul
Editor

CHAIRMAN'S NOTES

It was very good to see so many Friends at the Reunion, nearly 100 attendees. I hope they all enjoyed it as much as I did.

Some of you will already know about the difficult financial situation faced by the RGM Operating Company. Robert, Cathy and Claire are all leaving. Lynne and Sam will be working part time, job sharing.

This situation means that next year's opening will be different. As a minimum it will only open Saturdays and Sundays throughout the season. The opening date has yet to be decided but is likely to be about the same as this year. It may also be possible to open on occasional weekdays, particularly for booked groups. Numbers of paid staff will be greatly reduced and there will much more need for volunteers. The volunteers will be the main work force on the site and will be needed for activities such as; staffing the entrance and (small) shop, the land train, stewarding, site maintenance and artefact conservation, among others. So please do come along and offer your services, even if it's only in a small way. During the closed season the regular Wednesday and Friday morning work parties will continue and some volunteers come in on other days as well. Entrance for this purpose is via Powdermill Lane and we meet in the Volunteers Room, L180, near the cafe.

If we do not get enough volunteers there is a danger that the site might close altogether which would be very sad, so please help in whatever way you can. Recently the volunteers have recently installed power and lighting in L181, one of the main storage areas for artefacts, and keeping control of vegetation is an ongoing activity. Shortly we hope to renovate part of the old fire alarm system and the rocket motor simulator which was used at the Farnborough Show some years ago.

I hope you all have a very Happy Christmas and look forward to seeing more of you in the New Year.

John Wright

ASSOCIATION MATTERS

ANNUAL GENERAL MEETING

At the AGM on October 4th the amendments to the constitution and resolutions as detailed in the September issue were all passed unanimously. This now means that our financial year will run from 1st January to 31st December. The good news is that your current subscription is valid until 31st December 2003 with renewal on Jan 1st 2004 at no extra cost!
It was also agreed that a General Meeting and Site 'Friends Day' be held in May next year and that, in subsequent years the AGM and Reunion will also be held each May.

Members will receive, with this issue, an updated copy of the constitution.

The following were elected to the new Committee:

Chairman	John Wright
Treasurer	Frances Burgess
Secretary	Richard Penfold

Committee Members:

Brian Clements	Ernie Cook
Harry Edwards	Bryan Howard
Dave Manners	Norman Paul
Dave Sims	Les Tucker

REUNION 2002

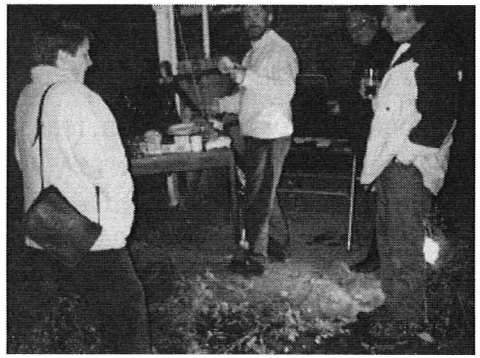
Once again a good turnout of almost 100 members for the Reunion, many of them travelling some distance. Moving the AGM from October to May will make for better travelling conditions in future and perhaps we will see more of you.
Our thanks once again to the Waltham Abbey Royal British Legion for use of their facilities and excellent catering.

STAFF & FRIENDS FAREWELL BARBEQUE

A farewell BBQ party for all the staff was held at the Lodge on Friday 25th October which was also attended by a number of the Friends Association Committee members and volunteers.

Despite the smiles it was a sad occasion as we have got to know and worked together with all the staff over the past two years.

Presentations were made to Robert Taylor and Cathy Morton Lloyd by the Committee members.



And, Regretfully, IT'S GOODBYE TO THEM!

I am writing to thank the Friends for the presentation made to me at the party. I was very touched by this kind gift and it will remind me of all the enjoyable times that I have spent here. I am sure that, with the help of the Friends, the Royal Gunpowder Mills will once again be an heritage site fully open to the public and I look forward to visiting then! With Best Wishes,
Robert Taylor

Thank You:
Further to my request in the last newsletter, many thanks to all those who expressed an interest in trying to collate information about the Royal Gunpowder Mills with the Waltham Abbey Historical Society. As some of you will already know, unfortunately at present it is not possible to go ahead with these projects.

Due to the financial difficulties experienced by the Trust, at the end of October I will have been made redundant along with other site staff. I have been delighted to be involved with the opening of the site as a visitor attraction and have gained a great deal of satisfaction from the enjoyment and fascination that the public have had in visiting this previously 'secret' area.

Obviously, I am disappointed not to be part its future, but would like to thank all the Friends I have come into contact with and in particular those who have been volunteers, for all their help and support, since I joined the staff in February 2001. I hope to keep in touch, by continuing to be a member of the Friends Association and trust that a long-term financial solution will be found to enable the site to be enjoyed by all.
With very best wishes,
Cathy Morton Lloyd

One piece of good news is that Gillian Norris will continue to run the very important and successful schools visit programme on a self employed basis

A LETTER TO ALL SUPPORTERS

Dear Supporter

We have all been very disappointed that it is not proving possible to continue the current form of the Royal Gunpowder Mills operation into the 2003 season.

The turbulence in the stock market, which is causing so much havoc for charities and similar bodies across the country, has hit us particularly hard. It comes at a time when we have not fully recovered from the delay to our opening last year because of the foot and mouth crisis and we are facing other more general factors which are affecting numbers attending museums and similar attractions. On the Board we have been working closely with our financing Foundation Trust to see if a solution can be found; but despite our efforts it is clear that we cannot continue as we are.

This new situation has arisen just as our programme with the voluntary supporters had really begun to take off and is therefore the more frustrating. These groups have played a significant role in supporting the permanent staff, which has been very much appreciated and we were looking to enhance that. However, as part of the moves to cope with the difficult financial position we face, we have had to declare the permanent staff redundant as from the end of October; we were just not able to guarantee their jobs next year. They have worked tirelessly to make this operation a success and the actions that we are having to take in no way reflects upon their performance and dedication.

You will recognise that opening to the public next year, even on a limited basis, will depend crucially on our voluntary support, including indeed members of the Company Board. The Board will be working over the coming month to identify feasible arrangements for opening. During that process we will want to consult with you and your colleagues to define the role that you would be willing and able to play. I hope that the vital help we need will be available to offer a worthwhile visit to members of the public during 2003.

I will write again when matters become a little clearer from our consultations. These involve not just staff and volunteers but also the various local authorities and statutory bodies represented on the Board and that of our Foundation Trust. The Royal Gunpowder Mills is recognised by all these bodies as of national significance and there is no intention to cast aside the results, money and effort that have so far been invested. The trick will be to find a way of weathering what should be a temporary problem so that we can get back to normal as soon as possible. There is a real role here for you and your colleagues.

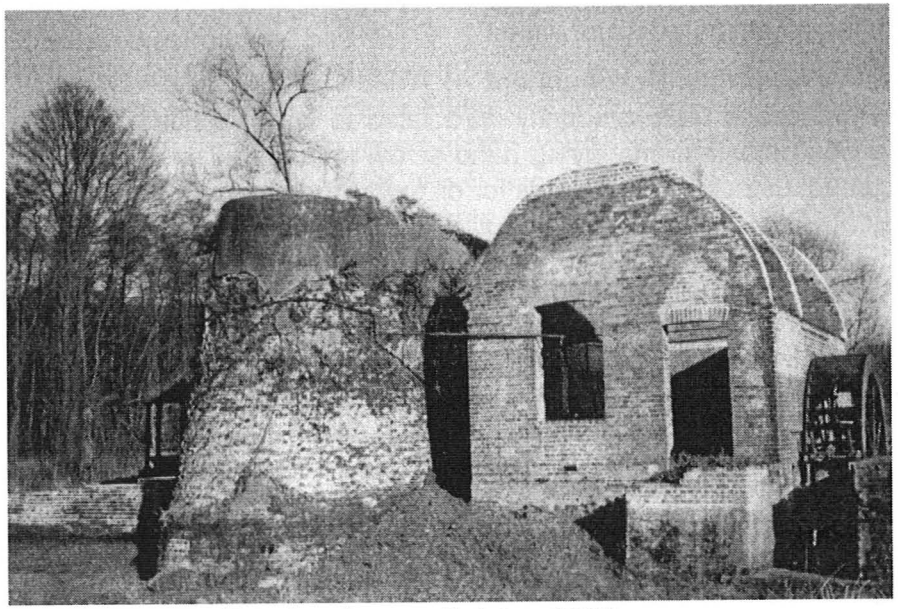
Thank you for your continuing effort and commitment on our behalf,

Yours Sincerely,

Trevor Knapp
Board Chairman

FURTHER PRINCIPAL STRUCTURES OF THE ROYAL GUNPOWDER MILLS

Part II Hydraulic power Press House No.1 Water Wheel powered - Built early 1850's



Exterior view - October 2002

BACKGROUND

Gunpowder originated in China. The Romans used it a crude form of rocket employed as a siege weapon in the 7th century. After a long gap it was rediscovered and its propulsive properties were recognised in Europe from the 13th century and were applied to military use in the form of cannon. In Britain the first record of the employment of cannon, which spoke of ' crackys ', appears in a contemporary account of Edward III's invasion of Scotland in 1327; succeeding early instances were the siege of Berwick in 1333, and a sea fight off Sluys in 1340. The first use by English forces overseas was at the Battle of Crecy in 1346.

The components of gunpowder - saltpetre, charcoal and sulphur, are mixed then ground and pulverised - incorporation. To obtain effective performance in use and retention of quality in storage and transportation incorporation should be as close and fine as possible. Initially incorporation was by hand in mortar and pestle.

This did not produce a mix robust enough to prevent separation of the components in transportation and when gunpowder came into use as an artillery medium incorporation had to be carried out in the field immediately prior to use. The situation was improved from the 16th century with the introduction of powered mechanical means of incorporation, initially stamp mills, in effect a mortar and pestle arrangement, or later, stone edge runner mills with power produced by animal or water wheel.

Pressing/Hydraulic Development

Other processes were gradually introduced to improve quality. Amongst these was pressing, employing hand screw presses. These had been in agricultural use since early times for oil extraction etc. from olives, fruit and vegetables. Initially pressing in gunpowder manufacture was employed in rudimentary fashion to make serviceable material from dust returned from the dusting house but it was gradually realised that more closely compacted the material brought important quality advantages, see below. Also, whilst edge runners were being adopted as they were safer and more economic than stamp mills the millcake they produced was looser in consistency and therefore there was an extra impetus for pressing to improve compactness.

Pressing at Waltham Abbey

Pre 1812 - Non Hydraulic Manual - Hand Screw Press

Pressing at Waltham Abbey was exclusively by hand screw press until 1812 brought major change. The process was similar to that employed in paper making - layers of millcake separated by copper sheets compressed by a screw turned manually by capstan.

Post 1812 - Hydraulic Development

(1) Manually Powered - Bramah Press from 1812

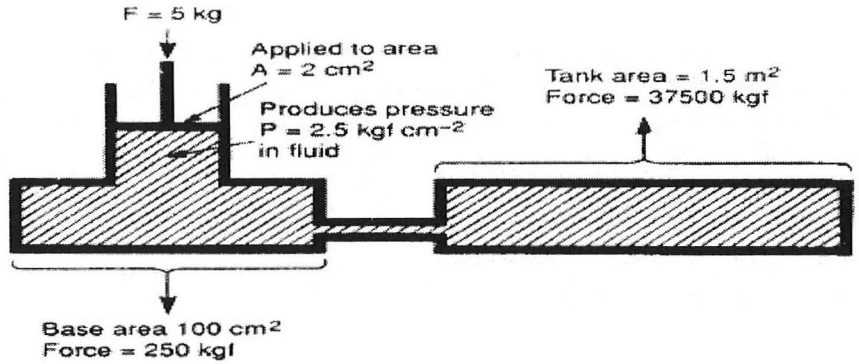
There was little technical development of the hand screw press and it had reached the limit of its productive capacity by the 18th century. For gunpowder production hand capstan operation was a serious inherent safety hazard.

In 1811 a serious explosion occurred in one of the hand presses at Waltham Abbey and a Committee of Engineers was appointed to investigate and make recommendations. It can be conjectured that in parallel with seeking to determine a means of reducing the risk of explosion the Committee would have taken the opportunity to look at ways of solving the problems of productivity of the hand system and of increasing the pressure and therefore density of the pressed material. It had become recognised that this increase in density brought an important range of quality gains - increased resistance to break-

-up in transport, increased moisture resistance, more powerful explosive performance per unit volume (e.g. although the information would not have been available to the Committee at the time, research by the Smithsonian Institute on the US Navy ship ' Philadelphia ' demonstrated that post pressing the necessary loading for the same gun between 1775 and the 1812 war with Britain was reduced by 1/3).

At this point Joseph Bramah enters the scene. In 1795 Bramah, who reputedly acquired his enthusiasm for hydraulics from designing and installing the revolutionary new water closets for the aristocracy and gentry, had been granted a patent involving water, which is incompressible, as a medium for transmitting energy. The patent covered a number of applications, the most important of which was the use of water for applying pressure force - the hydraulic press, comprising a hand lever operated pump and reservoir connected to a hydraulic cylinder and ram. The burgeoning production of the Industrial Revolution had created a demand for improved means of handling and moving goods and after improvement, particularly by Matthew Murray, the Bramah press was widely adopted for a range of applications for ' the throwing of small articles into bulk', particularly in the all important textile industry.

Bramah's patent was based on principles enunciated by the French physicist B. Pascal in the 17th century. The nub of Pascal's Law was that pressure in an enclosed fluid is uniform throughout the system, i.e. the same pressure is exerted at every point in the fluid. The practical effect which the genius of Bramah revealed was that in a combination of large and small cylinders with pistons connected by a pipe and filled with fluid a pressure in the fluid created by a small force acting on the piston in the small cylinder will result in a large force on the large piston - multiplication of forces (the size of the pipe is immaterial to the effect).



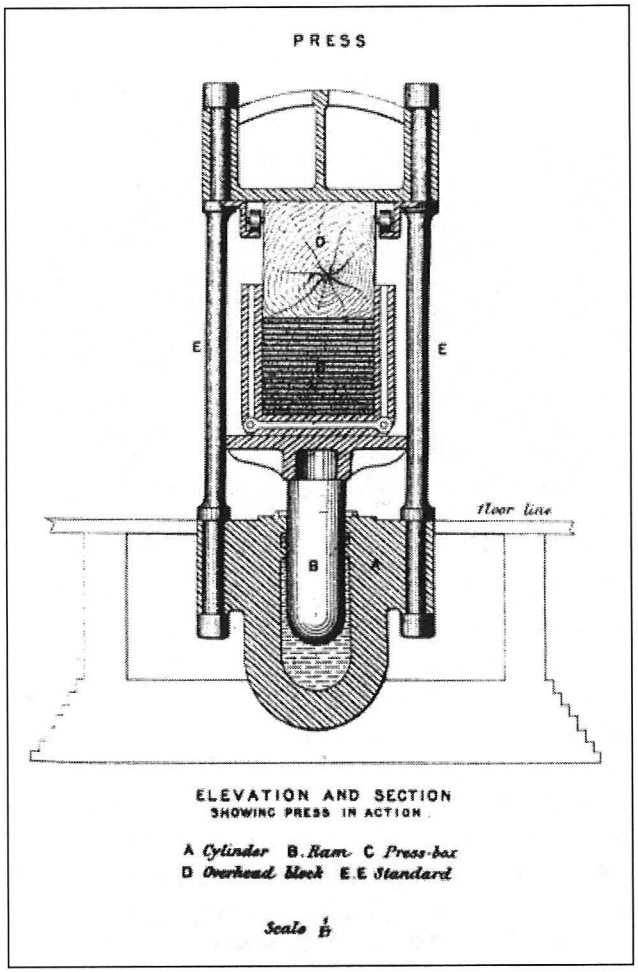
It can be seen from the illustration that where a force of 5 kgf is applied to a piston area of 2cm² in a tank of 100cm² a pressure of 2.5 kgf cm² is produced at every point within the fluid, acting with equal force per unit area on the walls of the system. This produces, in the larger tank of 1.5 m², an upwards force of 37500 kgf.

The story of the Industrial Revolution and beyond was partly one of an ongoing series of technological innovations being utilised to solve problems which had been blocking the way to increased production/improved quality, not necessarily in ways which had been envisaged by the originator, and the gunpowder industry was no exception. The Bramah press was a perfect simultaneous means of increasing presscake density and increasing safety - as the point of pressing was separated from the hand lever by the hydraulic pipe the system could be operated remotely. It is not surprising therefore that the Committee recommended its adoption. By 1830 there were at least 14 Bramah presses in operation at Waltham Abbey.

The earlier part of the 19th century was a period of relative quiet at Waltham Abbey but external international events brought a gradually increasing demand, materially increased by the Crimean War 1854-1856. The Governmental response at the Mills was reflected in the commencement of a major incorporating mill building programme in 1857 together with the introduction of a new power source - steam. Increased demand, both for output and quality, impacted down the whole of the manufacturing chain, including pressing.

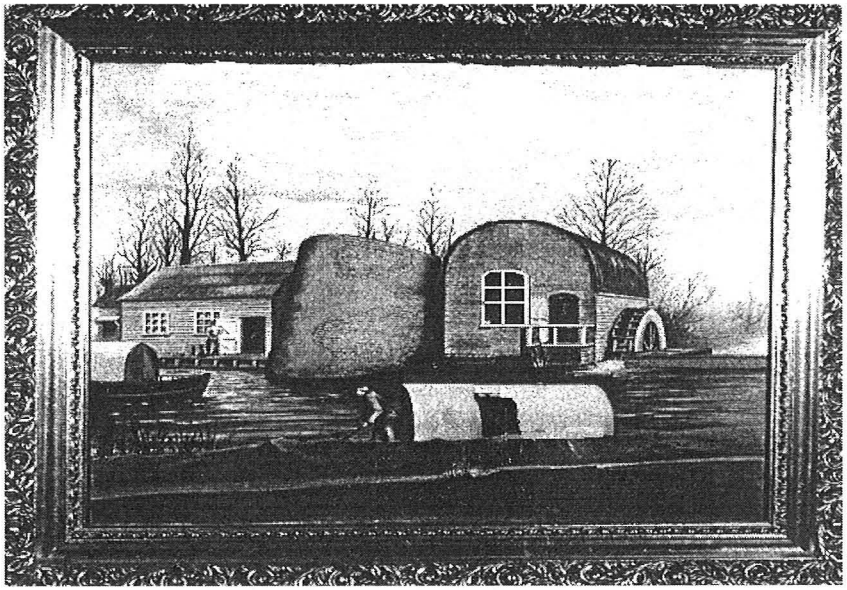
The hydraulics of the Bramah press had represented a significant technical advance but it still relied on hand operation and it was reaching the limit of its development in terms of capacity and pressure / density of product.

The response was to build around the time of the Crimean War two new press houses on the site of disused horse corning mills - Building 76 designated Press House No.1 and Building 103/104 designated Press House No. 2. Building 76 was converted to a cordite mixing house in 1898 and later demolished. Building 103/104 has survived and was renumbered Press House No.1. For the first time pressing in the new buildings was mechanically powered. The power source was the long serving water wheel, powering hydraulic pumps.



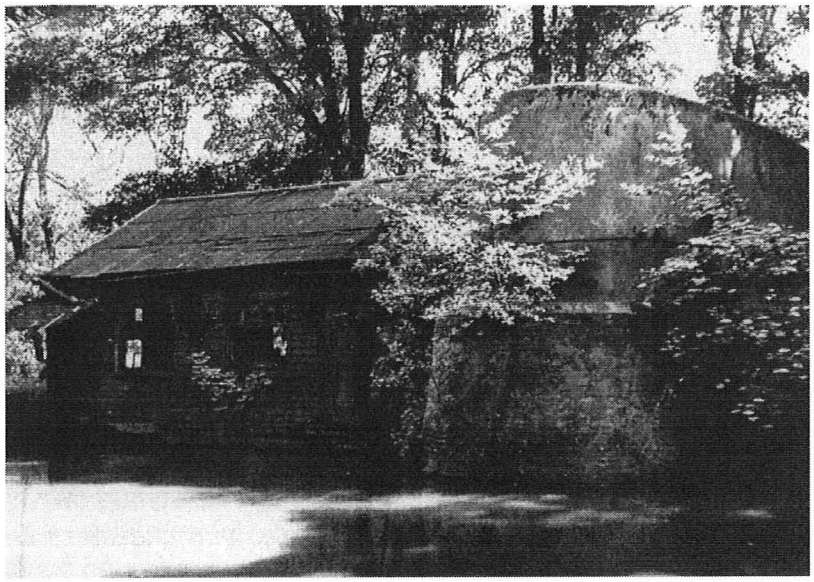
This drawing shows the design for the hydraulic gunpowder presses installed at Waltham Abbey. Taken from the 'Handbook of the Manufacture and Proof of Gunpowder as carried out at the Royal Gunpowder Factory at Waltham Abbey' by Capt. F M Smith, 1870

(2) Mechanically Powered - Water Wheel Early 1850's
Building 103/104 Hydraulic Press House No.1

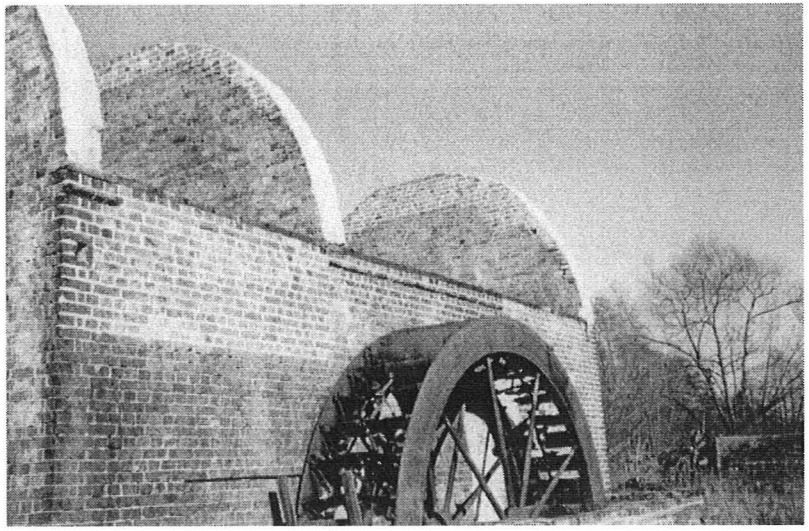


How it would have looked circa 1880 - taken from a painting by unknown artist.

Although normally termed Press House there are actually three structures involved, situated on the east side of the Mills between the burning ground and the Old River Lea. Looking to the east :
On the right -Building 104 Pump House with water wheel on right.
On the left - Building 103 Press House.
In the middle - the Traverse.
Employment of the old corning mill site was advantageous as the existing traverse could be utilised and a canal connection to the high level Millhead existed, previously used for materials transportation to and from the corning mills but now performing the vital additional function of providing the power source for the water wheel. The canal terminated in a basin in front of the buildings but in order to provide a flow for the wheel and drainage for surplus water a sluice with tailrace and leats draining to the Old River Lea to the east were constructed.
The Pump House brick structure remains but is without its barrel shaped corrugated iron roof, see below.
The Press House as a danger building had the usual light wood walls to allow the passage of blast from any accidental explosion. These have gone and therefore only the building foundations and the Press itself remain.

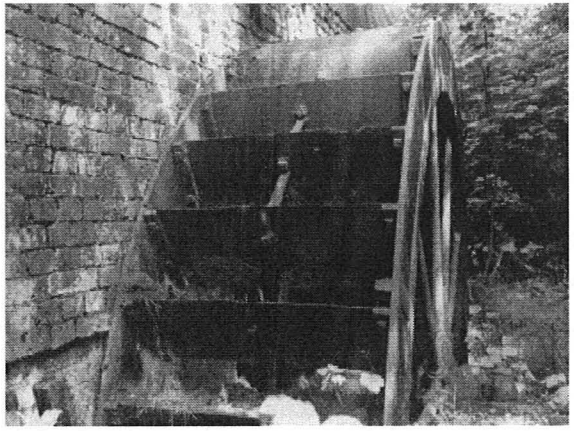


Exterior of Traverse and Press House showing high level canal (1940)



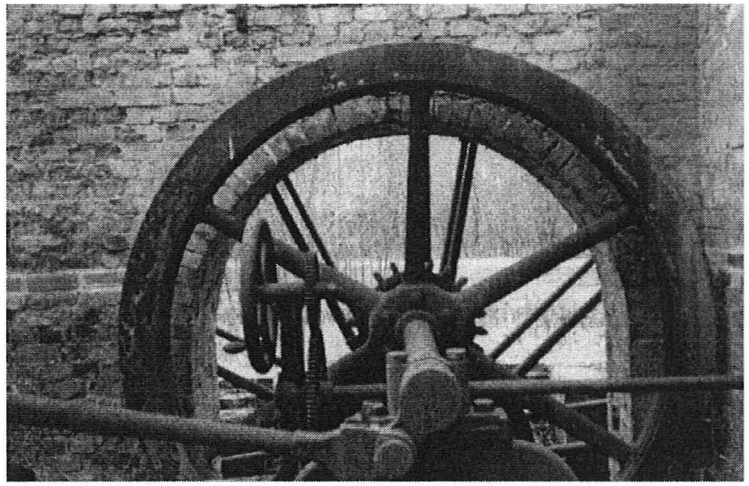
Waterwheel and Pump House minus corrugated iron roof (2002)

The mechanical equipment, water wheel,pump and press, was manufactured by Wm.Fairbairn of Manchester, a prominent firm of engineers:

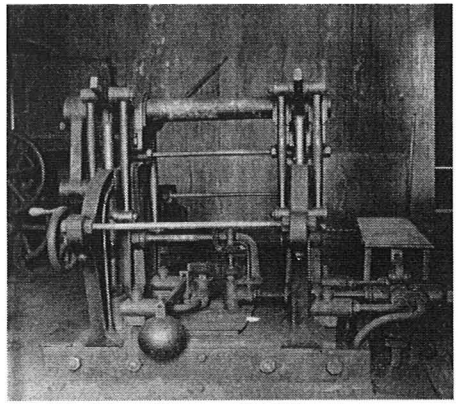


The Water Wheel - In brick wheel pit Low breastshot cast iron 14' diameter with 40 buckets (1940).

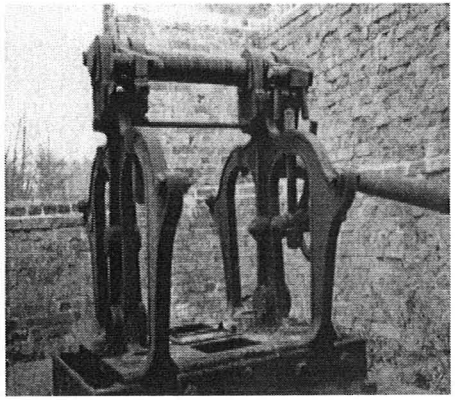
The Sluice Gate was controlled by hand wheel in the pumphouse operating via a reduction gear, driveshaft and worm and wheel to rack and pinion sluice gate drive.



Gear Train and drive from Waterwheel :-
Flywheel,Driveshaft, Crank and Connecting Rod.



Working Pump (1940)



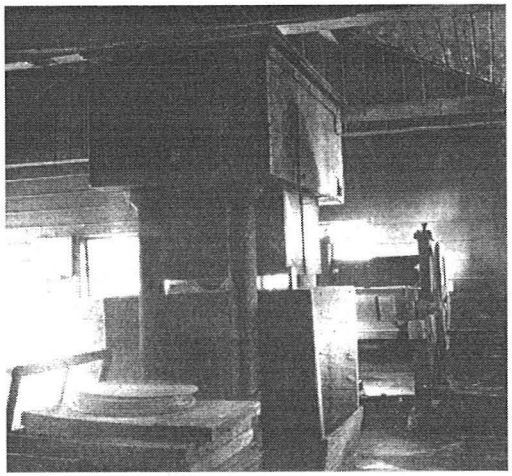
Pump Frame (2002)

Piston Pumps - have not survived. There were four, driven via two rocker arms, two pumps on each.
Pipework, with hydraulic flanges. With the exception of the pumps, all of the above have survived, albeit in a parlous state.

The Press now stands, open to the elements, an almost mesmeric symbol of the ruggedness and strength of Victorian engineering.

The elements of the Press were :

The Ram and over the Ram the PressTable on which was placed the Press box of gun metal, lined inside and out with oak. An Oak Block was placed overhead.



Side view of Press (1940)

Broken down millcake was pressed in layers and to achieve this it was loaded on to copper press plates, 30-40 to the box, half inch apart. To load or unload the box was swung out from the table. After loading the box was turned back on to the table and the overhead block was lowered to just over the top surface of the material in the box. The water wheel/ pumps were then actuated. Contrary to modern practice, the pressure from the ram was therefore exerted upwards.

The foreman certainly earned his money. Whilst pressing was going on the workmen were safely in the Press House on the other side of the traverse but the foreman ' should go in (the Press House) from time to time to see that everything is working well '.

The normal loading of the press box was 500 lbs § and the pressure exerted was 70 tons per sq.ft., sustained for 15-30 minutes. At the end of the pressing a relief valve was opened and the weight of the ram and the press table/box carried the table down for unloading.

§ *There has been some debate over whether this figure is correct as a figure of 800lb has been cited twice in military management accounts of operations at the Mills - 1857 and 1870. Nevertheless the press box was 2ft 6in square which with apressure of 70 tons per sg.ft.. gives atotal pressure of 437 tons, not far off the 500 quoted and a report of 1830 describing operations specified a typical loading of 504lbs for a hand screw press at Waltham Abbey.The Act governing explosives manufacture at the time laid down a limit for pressing at any one time of 10cwt (1120 lbs) so even 800lbs would be within the limit.*

The presscake adhered to the plates and had a slate-like consistency. The following description in an 1870 management account of processing at Waltham Abbey of separation from the plates seems to show a rather startling complacency about the risk associated:-

"Each plate, with a layer of hard slate-like cake adhering to it, is separated from the one beneath it, and being lifted into a wooden bin, gets a few knocks with a wooden mallet which cause the cake to fall off in irregular fragments, which are broken into pieces the size of a man's hand, shovelled into tubs, and removed to an expense magazine".

After these words were written a disastrous explosion happened on the 16th June 1870 at the Lower island works. From the statement of one of the survivors it appears that they were making use of a copper chisel to separate the plates*!*

In terms of 19th century technical development the use of water power in preference to the power of the future, steam, could be viewed as somewhat regressive. However it is possible that safety considerations were a significant influence. The new buildings would have required individual steam engines and their dispersal could have been seen as a safety hazard. It is a moot point how far the decision to employ water power was a result of this consideration and how far technical conservatism and the existing availability of water from the Millhead in the canal leading to the site. (The later introduction of steam at Waltham Abbey in conjunction with William Armstrong's weight loaded hydraulic accumulator and centralised hydraulic distribution is discussed in an earlier Friends publication 'The Listed Buildings at the Royal Gunpowder Mills').

This does not in any case detract from the satisfying symmetry of the use of water at No. 1 Press House - as a transport medium for materials and as a power source in two stages - the hydrokinetic energy of the water wheel producing the hydrostatic energy of the pumps.

<u>Significance of No.1 Press House</u>

Given that the buildings and machinery of the Millhead were systematically destroyed it is a near miracle that the Press House did not meet a similar fate and that sufficient remains to present a coherent picture of a water driven hydraulic system.

It is of major significance in the history of the gunpowder industry and to British if not international industrial archaeology in general

* It is a very rare surviving instance of water produced hydraulic power, i.e. hydrokinetic energy from a water wheel producing hydrostatic energy from pumps.
* It is a unique example of the application of water powered hydraulics to gunpowder manufacture
* It is an important surviving example of the combined use of water for transport and hydraulic power in an internal industrial system
* It is an important element in the catalogue of surviving hydraulic machines in Britain (a declining number).

There are grounds therefore for arguing that No.1 Press House should be accorded the status of a national engineering monument.

The Site to-day and the Future

The site presents the full spectrum of the problems associated with preservation of an industrial monument :

Pump House roofless, exposing pump and machinery to the elements.
Water Wheel rusting, particularly paddles.
Press exposed to the elements, seriously rusting.
Traverse rendering breaking off and roots deeply embedded in Traverse.
Brickwork spalling.
Area of dry mill basin in front of buildings heavily invaded by self seeding alder and sycamore which will ultimately cover the site.
In addition it lies within the area of a larger industrial monument and therefore decisions cannot be made independently

The problems and possible solution fall into four broad categories :

(1) Alleviation of rusting (2) Alder and Sycamore incursions
(3) Machinery restoration (4) Building restoration.

(1) and (2) are theoretically feasible but would require a concerted effort and a large number of volunteers. Realistically it is unlikely that the Friends could provide the number and they would have to be supplemented by other bodies such as Epping Forest conservation volunteers, with the Friends concentrating more on the rust problem along the lines of the excellent work done on the 1939 cordite press.

(3) and (4) would have to be subject to funding and control by outside bodies such as English Heritage.

Action is required urgently. Failing that, this article will merely serve as an epitaph for yet another fast disappearing piece of Britain's technical heritage!

A Note on Corrugated Iron

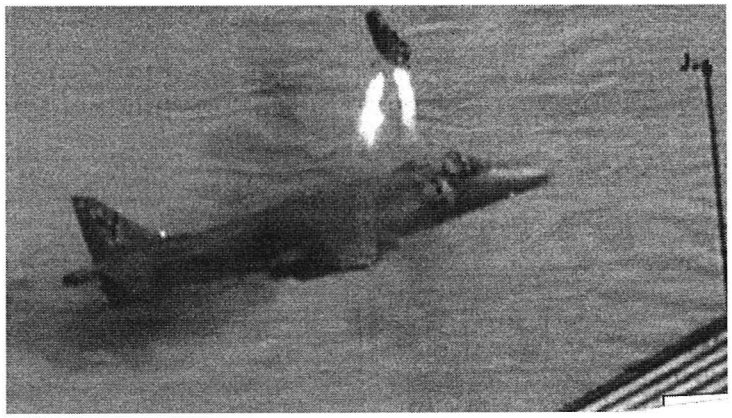
Part of the corrugated iron roof of the Pump House has been saved and is stored, albeit in poor conditions, on one side of the site. This is a rare example of this material in 19th century wrought iron form. From the 1890's iron was replaced by corrugated mild steel, normally galvanised, i.e. dipped in molten zinc, but the habit remained of calling it iron. From the 1970's material has been developed with a coating including 55% aluminium/43% zinc and some silicon.

Galvanised corrugated iron was massively sold in countries such as Australia and Argentina, particularly for roofing, and there is now anguished debate amongst conservationists on how best to repair/replace it, giving rise to learned articles with titles such as ' Corrugated Iron - The profile of a National Culture ' and ' The Corrugated Iron Aesthetic '.

Published by the Friends Association of the
Royal Gunpowder Mills Waltham Abbey
December 2002

ANOTHER PILOT SAVED !

The two day Airshow at Lowestoft last August was well into the afternoon of the second day and the crowd of some 180,000 people were being thrilled with the performance of the Harrier Jump Jet, flown by Flight Lt. Tony Cann when it became apparent that the plane was getting very close to the water.

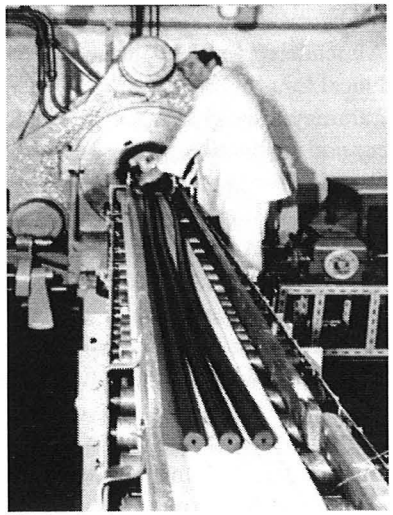


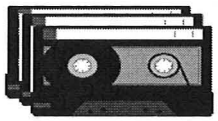
Suddenly, there was a terrific bang as he pilot ejected, followed by the Harrier hitting the water. The pilot had to steer his parachute to try and avoid the plane and escaped safely apart from an injured ankle.

The Martin-Baker Ejector Seat can add another name to the list of pilots saved and both Waltham Abbey and Bishopton should be proud to have developed and supplied the KU propellant that powers the ejector seat.

Bryan Howard

Although the Martin Baker Company were responsible for the actual hardware and production of the ejector seat the KU propellant was developed at Waltham Abbey and manufacture transferred to RO Bishopton.
This photograph, recently obtained from Bishopton, shows the extrusion of the KU propellant.





THE ORAL HISTORY TAPES

Would you like to listen to our Oral History tapes? I have provided a copy set of tapes so far (14), together with a player and brief notes about the data Also a note-book for any comments, correction, additions or offers of one's own contribution which can be nade in person or over the phone (0208 529 5673).
For access to the tapes please contact Lynne lennard at the Lodge on 01992 707330 (Thurs or Fridays) to make arrangements for a visit. Please do not remove any tapes but listen to them on site.

Ron Treadgold

CURIOUSER AND CURIOUSER - THE ENFIELD INCH !

A query from an Australian member of the RSAF Apprentices Association has come to our attention and concerns the curious episode known there as the "Enfield Inch".

The background is as follows: in 1908, the Australian Government awarded a contract to the American Pratt & Whitney company for the construction and complete equipping of a factory to produce the then-current version of the SMLE rifle. All rifles in use by Australian Military forces at that time were of British manufacture, and it was required that all parts produced in Australia be not only interchangeable among themselves, but also fit the many thousands of British rifles already in service here. The factory was built at Lithgow, an industrial town about 100km west of Sydney.
The RSAF tendered for the contract but at almost double Pratt & Whitneys's price - which shocked local Empire Loyalists.
Pratt & Whitney were given a set of British drawings and six new rifles. They set up all the machinery and production gauges in America to prove the production before shipping it to Australia and soon discovered that parts made from the set of sealed drawings were not interchangeable among themselves because the tolerances were too sloppy. This was easily remedied. They then found that the parts would not always fit British rifles, and for an extraordinary reason: It was eventually realised that the RSAF drawings used two versions of the inch: dimensions greater than 2 inches were in Imperial inches, but those less than 2" were in a local standard known as the 'Enfield Inch'. No one from RSAF had thought to mention this rather whimsical practice. Possibly they would have had not an American won the contract!
How could such a respected manufacturer of precision equipment operate with two standards of measurement? It must have caused problems in the factory, it certainly did in Australia and America. There must have been a moment when the RSAF had to admit the cause of Pratt & Whitney's difficulties; there might even have been compensation paid.

Help Needed From ex -WA Apprentices

From: "The Birchmores" e-mail: thebirchmores@yahoo.co.uk

Subject: RSAF Apprenticeship- Questions from Graham Birchmore
In conjunction with Roy Burges, I am writing up the history of the above subject. My particular interest is the actual training we received at the Lock and I have a number of specific questions which I am attempting to get answered. Are you able to help? If so please e- mail direct to me at the address above.

1.Craft Apprentices.
How were the apprenticeships advertised and what was the selection process. I am interested for the period 1930 to when the Factory closed. If you can cover your own period it would be excellent. Also, how many Craft apprentices were taken on each year?
2. Selection of Student/Engineering apprentices
2.1 Some time between 1945 &1955 selection was moved from Woolwich control to Min of Supply headquarters in London and selection was by national competition for all theGovernment Factories/Establishments. Previously it was for places at Woolwich, RSAF and Waltham Abbey. Does anyone know when this change of control occurred.?
2.2 Competition was by examination, can anyone recall the subjects from the mid 50s onwards and was there any subsequent changes to the selection procedure.
3. In theTraining Centre who followed Ted Windley and Charlie Rodgers and when.?
4. In 1956 theTraining Centre was located just north of the water tower and weighbridge. Was the first TC there when it was opened in 1942?.
5. I believe the TC was moved in the 1960/70's, where to?
6. Can you recall your wage, the year and the hostel fee, I believe the first year apprentices received subsistence. Also for comparison purposes, how much a skilled man, say in the gauge or tool room, would be paid?
7 How much was an instructor out in the workshops paid for training an apprentice?
8. The Trade Unions played an important role in fostering the apprentices and the training. Can anyone provide an overview?
9. During the second year time was spent in the Tool room, gauge room and experimental shop on milling, turning and fitting. Can you recall what you made and some of the lessons learnt.
10. During subsequent years we all spent time in the smithy, heat treatment, foundry, planning, DO, etc. Can you recall what you actually did?
11. With the advances in technology in the use of computer controlled systems through 60's to the 80'and also the run down in the size of the factory, was there a change in the practical training?
12. When did the changes from War Office to Min of Supply and then MoD take place?
13 The Apprentice Board. Who were the members, how often did they meet, what did they do and decide on. Can anyone provide a top down view as to their role?
14 What happened at privatisation, how did it affect the training, also when the factory closed?

GRAHAM BIRCHMORE ex ROF Enfield Lock

TOUCH

Always a warm welcome...

We are volunteers from the North who make occasional visits to the site. We always get a warm welcome from old colleagues (well, most of us are old!) and the more recent staff and volunteers. We were on site for the last day of the season, although it was closed to the public because of the storm. We covered the model railway layout to protect it and at the same time were able to devise a simple dust cover for next year. The model had won 2nd prize at our club exhibition at Chapel-en-le Frith in February. Gordon Bromberger came to see it; I had not seem him for over 20 years! He brought a large copy of the 1923 site plan so I was able to replace the laboratory numbers with factory numbers.

I have been presented with detailed plans of H25, the women's hospital annex, built in 1916 and asked to build a model. I would like to see any photographs of this building, also details of nurses uniforms of this period as people are always included in my models. Are there any records about the hospital? Dangerous Energy states there were no fatal accidents on the site in the 1st World War.

We hope more of the Friends will be able volunteer next year to help and to enjoy the site, the company and a warm welcome, "Every Little Helps".

Tony Barratt

Industrial Injuries...

We have been given an old 'ACCIDENT BOOK' for the old E2 Branch giving entries from April 1967 to February 1970. Keeping of these records was a requirement under the National Insurance (Industrial Injuries Act), 1946. Despite working with such hazardous materials, all the entries in the record, of which there are 19, are very minor incidents, usually due to the hamfistedness of some of the workers. For example:-

"dropped bolster on 2nd finger RH",
"cut on little finger LH caused when adjusting points on railway",
"graze on R elbow caused by catching elbow on fume cupboard door".

As those who worked there know 99% of all recorded incidents were of this nature and there were very few serious accidents in the period when the site was a research establishment.

We must however recall one incident which happened in the late 1940's that caused much merriment among staff when the wording of a notable entry was hung in the balance room of the Main Lab:-

"Percy Treadgold - Whilst attending to the requirements of nature I caught my testicles in the mechanism of an earth closet and had to seek medical attention".

BYTES

Memories...

This picture was taken outside N 562 sometime during the summer of 1972 after Ron Ayerst took the helm of P1 Branch. Who can name the most people and where are they now?

I also have some pictures of the inside of R 616, but apart from showing some 1980's hi-tech kit meeting, the 1960 propellant extruder and one or two good looking types running it, it's not terribly exciting.

It's a shame to think that we finally got a good handle on how to make good, consistent (mainly NC based) propellants and then the MoD sells us off! I think the twin screw extruder that Roy Carter set up was still in sheds at Bishopton because no one with the skills needed was willing to go transfer up North.

Grant Privett P1 Branch 1980- 1989.

Faversham Society News...

The Faversham Gunpowder Personnel Register 1573-1840 continues to make progress. When it's complete it will be published in the 'Faversham Papers' series. There are now some 350 entries and a number record transfers to Waltham Abbey.

Phase 1 of the new displays recently opened to the public and includes a small section on explosives and a video on the local gunpowder industry.

We hear that all is not healthy in the field of explosives heritage. Ballincollig has closed, at least temporarily and I hear that problems occur at both RGM(WA) and 'Explosion' at Gosport.

Arthur Percival Hon. Director Faversham Society

DON'T FORGET
DEADLINE FOR THE March 2003 ISSUE:
15th February 2003

A CHRISTMAS MESSAGE

We would have wished you a Happy Christmas personally, but, in accordance with the guidelines issued by OFWISH:

From us (the wishors) to you (hereinafter called the "wishee"):-
'Please accept, without obligation, implied or implicit, our best wishes for an; environmentally conscious, socially responsible, politically correct, low stress, non addictive, gender neutral celebration of the winter solstice holiday, practised within the most enjoyable traditions of the religious persuasion or secular practices of your choice, with respect for the religious/secular persuasions and/or traditions of others, or their choice not so to practise at all .... and a financially successful, personally fulfilling and medically uncomplicated recognition of the onset of the generally accepted calendar year 2003, but with due respect for the calendars of choice of other cultures or sects and having regard to the race creed, colour, age, physical ability, religious faith, choice of computer platforms or dietary preferences of the wishee.

Please Note that by accepting this greeting you are bound by these terms and automatically accept that:

This greeting is subject to further clarification or withdrawal. This greeting is freely transferrable provided that no alteration shall be made to the original and that the proprietary rights of the Wishor are acknowledged.
This greeting implies no promise by the Wishor to actually implement any of the wishes.
This greeting may not be enforceable in certain jurisdictions and/or the restrictions herein may not be binding upon certain Wishees in certain jurisdictions and is revokable at the sole discretion of the Wishor.
This greeting is warranted to perform as reasonably as may be expected within the usual application of good tidings for a maximum period of one year (twelve calendar months) or until the issuance of a subsequent holiday greeting, whichever comes first.
Furthermore, the Wishor warrants this greeting only for the limited replacement of this wish or issuance of a new wish at the sole discretion of the Wishor.

Regulated by OFWISH. Before accepting these greetings you should contact a qualified Independent Fortune Teller Advisor. Past performances of previous greetings does not guarantee future performance. The value of these greetings may go down as well as up.

Thanks to Chris Evans who acquired the basis of this from a solicitor friend.

A FISCAL CALENDAR

January brings surcease
from the Christmas money feast
February is cold and drear
Will I make it through the year
All through **March** the cold winds blow
Bank account now starts to grow
Like **April** showers it's down the drain
Must insure the car again
May to **June**, a sorry state
Gas, Electric, Water Rate
July brings the warmer rain
Got to paint the house again
August holiday is axed
Can't afford to get car taxed
September's mellow leaves do fall
Blocked the sewer, drains and all
In **October**, more expense
Wind blows down the garden fence
Cold **November**, can't do much
Damned old car needs damned new clutch
Come **December** much too late
for me to get finances straight
The year has been just one long pain
And now it's bloody Christmas again !