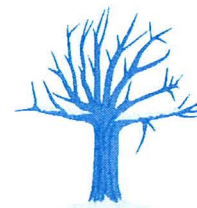


**ROYAL
GUNPOWDER
MILLS
WALTHAM ABBEY**

'TOUCHPAPER' ©
Published by WARGM Friends Association
Printed by PRONTAPRINT Bishop's Stortford

Touchpaper

The Newsletter of the
**ROYAL GUNPOWDER MILLS WALTHAM ABBEY
FRIENDS ASSOCIATION**



**DECEMBER
2000**



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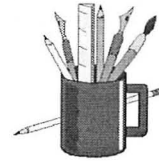
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PLEASE NOTE: Deadline date for submissions for
the next issue is 15th March 2001



EDITORIAL

We are receiving and commissioning an increasing number of factual articles describing various aspects on the history of the Gunpowder Mills. These include some technical articles and others on the landscape, the architecture and use of buildings as well as the social history of past workers. Nevertheless I would still welcome any other items that readers may find of general interest as well as any cartoons, puzzles and competitions to add further interest to this newsletter.

Of course, I will still find space to keep you all abreast of the development and details of planned events when the Site is open next year.

Since the Association was formed in 1998 we have given much support and assistance to the project but there is so much more that we can do, especially after opening. But to do this we will need more volunteers. If you can help in any way please get in touch.

Our thanks to all those who have helped in the past year and to everyone I wish you all A Happy Christmas and a Busy and Fruitful New Year.

Norman Paul



ASSOCIATION NEWS

ANNUAL GENERAL MEETING

The Association AGM was held on October 6th at the premises of the Waltham Abbey Royal British Legion and was well attended by members. The existing Committee and Officeholders were re-elected to serve for the coming year.

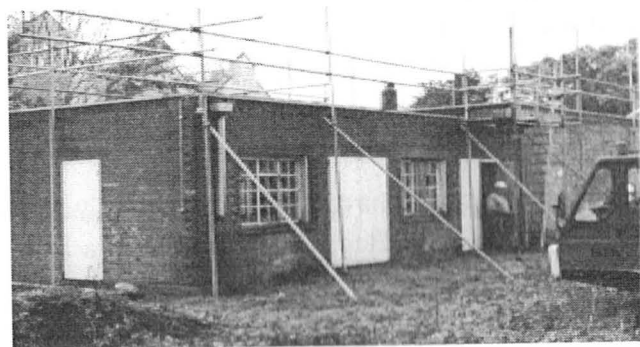
ANNUAL REUNION

This followed the AGM and was attended by nearly 100 members (this probably explains why we have such a good turnout for the AGM!). Once again we must thank the Legion for their hospitality and splendid buffet. It would be difficult to find a better venue. We welcomed Robert Taylor, Site Director, to our get-together and he gave a short talk on the progress of the project and how much he looked forward to working with the Friends.

WORKING PARTIES

An intrepid band of volunteers continues to meet each Friday to carry out a number of jobs given to us by Lynne Lennard, the Site Manager. These range from clearing brambles, clearing gutters to putting up shelves and painting new doors. When the weather is bad there is still plenty to do in the Lodge, reorganising plan chests and drinking coffee.

What we will need, as we get nearer and nearer to opening (and after opening) are many more volunteers so, if you live fairly local, why not pop down and see us.



Friends 'Headquarters Building'

In the near future we shall be having our own headquarters on site. The building has been made weatherproof and will be fitted with electrics. The fit out inside is up to us so, once again, many more volunteers will be needed.

PROJECT NEWS

You will be pleased to hear that despite the recent abnormal rainfall the Site, although very wet and muddy, was not affected by flooding. It has, however, slowed up some of the work but the contractors are still confident of meeting their completion date.

There have been two recent additions to the Company's permanent staff with the recruitment of a full-time Marketing Officer and a full-time Education Officer. These are key posts to the success of the project and we welcome:

Gillian Norris



Education Officer

Gillian was originally a teacher and has worked as Education Officer for the National Trust in East Anglia. She believes that the combination of history and nature offers huge scope for children in all stages of education and also for life long learning for all ages.

Lindsay Berry



Marketing Officer

Lindsay previously worked for an educational charity in London in marketing. As a brand new venture it is difficult to predict public reaction and she believes that the marketing strategy must be very flexible and needs to be responsive to events and feedback.

OPENING ARRANGEMENTS

The Site will be officially opened by the Duke of Gloucester (to be confirmed) on April 5th attended by various VIP's and Press.

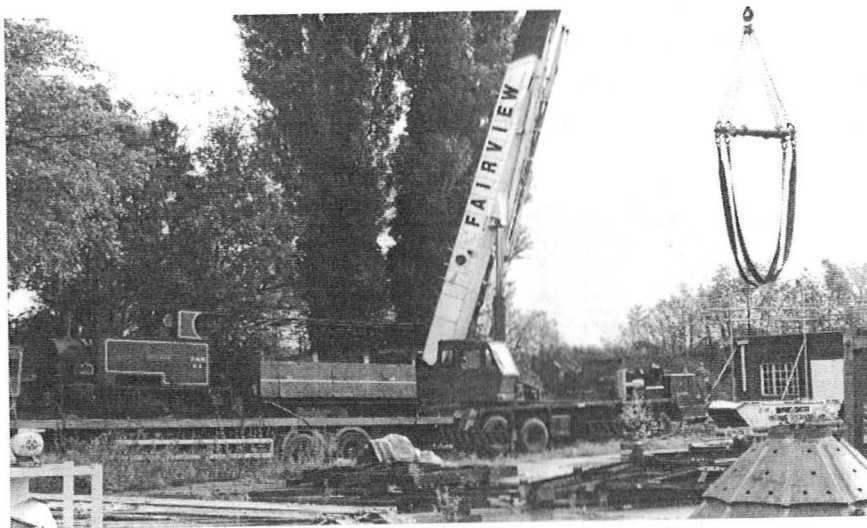
The proposed public opening is scheduled for the 6th, 7th and 8th of April 2001. This will have a local community focus will special displays and a fireworks display.

FULL DETAILS IN OUR NEXT ISSUE



THE NARROW

September's Newsletter gave details of the purchase of the Woolwich Arsenal engines and carriages from Bicton Gardens and the arrival of some of the carriages. On the 18th October the engines and rest of the carriages and wagons arrived, an event covered by the local press.



Taking delivery - photo by Richard Penfold

The cost of the move from Devon was largely met by grants from two Essex charities. Thanks to the hard work by the Friends in clearing the brambles and levelling the surrounding area it was possible to place the rolling stock on the concrete slab where L172 once stood. At this time they are sheeted over but will be moved under cover as soon as a suitable building is available. Unfortunately the site of the original engine shed is now covered by Wilcon's houses.

That we were able (just!) to acquire them was an unique opportunity because so few railways of 18" gauge now exist, and even fewer with former WD rolling stock, so enabling us to reinstate a length of railway close in appearance to the original. As only isolated sections of track survive it is easy to forget how extensive the system on both North and South Sites was, complementing the waterways. In the early 1960s Bicton Gardens put carriage bodies onto standard WD frames and bogies similar to those under the gunpowder wagons shown in the photo in the September issue.

We have three engines. The first is an unique and large 13½ ton Hunslet diesel capable of pulling 375 tons, which has been moved directly to Keef's light railway workshops near Ross-on-Wye for overhaul of its transmission system, for which funds have yet to be raised.



GAUGE RAILWAY



The second is the sole survivor of 16 waste-oil burning steam engines delivered to Avonside to Woolwich in 1916. No steam engines were used on the Waltham Abbey lines so we hope that historical purists will excuse our indulgence in bringing steam here. It should however help to draw in the visitors.

The third is a defunct Ruston diesel of 1945, a smaller version of those the firm supplied to Waltham Abbey and shown in the same photo. Coupled to a few gunpowder or cordite wagons as a static display it should give the visitors a good impression of how the system used to look.

Off rails the engines and carriages look incomplete and forlorn. The next stage is to acquire track of the right weight, preferably 40lb per yard (we didn't deal in metric then), sleepers and ballast and to lay it along, or as close as practicable, to the former routes. We hope to start with the easiest section along the south and east sides of Queen's Mead and then - who knows? To re-lay further west towards H7 and north along the canal side does present some civil engineering challenges which it would be good to resolve and so give visitors (and ourselves) a worthwhile ride.

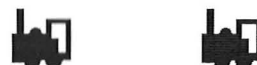


"The Woolwich" - photo by Richard Penfold

As the sudden availability of these engines and carriages could not have been anticipated, progress with the railway will depend on additional fundraising and DIY, especially for track laying. The more we can do ourselves the sooner the wheels will turn.

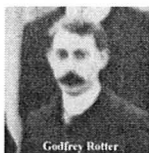
Not everyone can become a steam engine driver but if you are a railway enthusiast, or are tempted to become one, do get in touch with me via the site office. There is a lot to do but, with help we could be operational in 2002!

John Bowles - WARGM Board Member (and Railway Enthusiast)



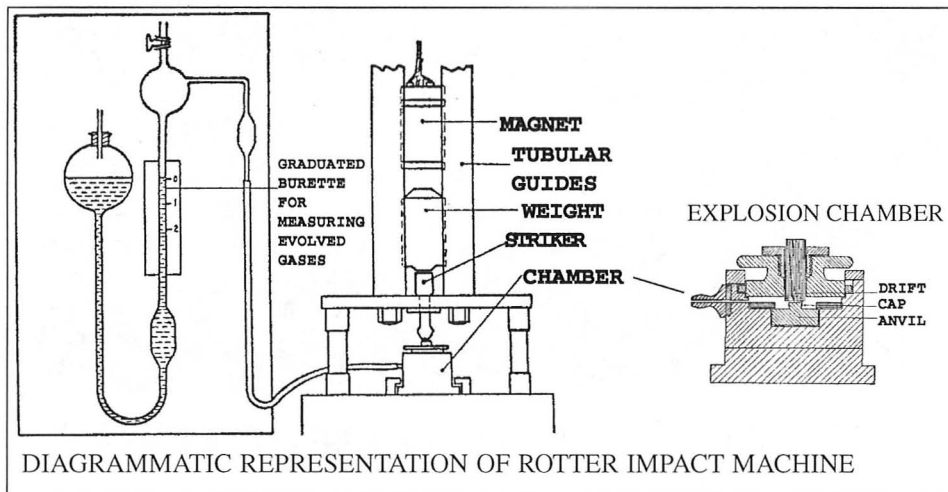
THE ROTTER IMPACT MACHINE

After the gunpowder era when a number of new and more powerful explosives began to be developed it became necessary to compare the relative sensitivity of these materials to shock. This was of extreme importance to those engaged in the manufacture and had direct influence on the design of manufacturing equipment and processes.



Around the turn of the 19th century Godfrey Rotter, working at the Woolwich Arsenal, designed an impact machine in which a weight was dropped onto a small sample of explosive. The height at which the falling weight caused the material to explode, termed 'a go' was recorded. For many reasons the results given by different machines in different locations tended to vary but using standard samples of certain explosives (eg picric acid) an universal ranking could be obtained.

Although various modifications have since been made to Rotter's original design, principally by Dr Poole in the early 1940's, it remains one of the standard safety tests for explosives using RDX as a reference standard. To cater for a diversity of materials there are drop weights of 1, 2 and 5kg, usually with a run of 10 drops at 5 heights around the 50-50 'go' point. Results are quoted as Figure of Insensitiveness or FoI.



Special thanks to:
David Lee (ex WA and then HM Insp. of Explosives),
Dave Mullenger (ex WA, currently at Fort Halstead)
and Bill Love (ex Woolwich Arsenal)

FURTHER DETAILS ON THE ROTTER IMPACT MACHINE

Readers may be tempted to think that pieces of equipment which have been in use for many years and are regarded as setting standards for certain functions have been designed on strict scientific principles and the dimensions of important parts carefully calculated - but this was not always so, as I discovered.

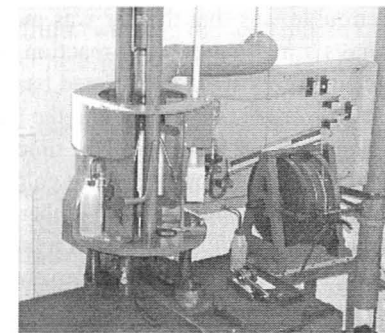
Whether by accident or design, the Sensitiveness Group was allocated building L149 which had a tall central tower and when Dr Poole became Chief Superintendent he decided that the tower was just the place for us to have our own Rotter Machine but incorporating certain 'improvements' of his design. He instructed me to "get the drawings from Woolwich and proceed a.s.a.p."

When I relayed this request to Woolwich it was met with a hollow laugh so I investigated further. My researches discovered that, when Dr Rotter conceived the idea for his impact machine, he had recourse to the scrap yard at the Arsenal. The main anvil was the butt end of a billet that had been used to turn a gun barrel and the weight guides were three pieces of 'T' iron that happened to be lying about. The electromagnet was recovered from the electricians scrap bin. It was the secondary anvils which proved to be the biggest surprise. These were made from some flat bar that had been bought for some long forgotten job and the major dimension just happened to be that produced by turning circular the squares produced by cutting up the bar. However, the 'pip' on which the sample rested was very carefully dimensioned indeed. When I asked why, I was told that the brass cups which fitted upside down to retain the sample was also rigidly specified, as they were used to make the percussion caps for a shell used in the Boer War and Dr Rotter had found a cache of some hundred of thousands of them which he had decided to use.

I arranged for a draughtsman to go to Woolwich to measure up the original, which produced some very strange dimensions indeed and we then set about making a 'chinese copy' incorporating the 'improvements'. It never worked.

Jim Jeacocke

Nevertheless all these difficulties were eventually ironed out and many of these machines are still in current use as this picture of a modern Rotter machine shows.



MORE TROUBLE WITH STOCKTAKERS

Previous articles regarding the iniquitous stocktakers seems to have struck a deep chord in the memories of ex-workers so here are just two more:

Distillation Equipment

Almost every laboratory had some form of distillation equipment and we were frequently visited by Customs & Excise to check that we weren't making illegal hooch. Admin. Were therefore particularly concerned about this. In L159 we had attached to the wall a Manesty still for the production of distilled water. (It would have been difficult to adapt this to make alcohol and indeed, we had much more sophisticated equipment in the lab had we been that way inclined). One day along came the stocktaker proudly bearing a newly issued Dymotape labelling machine to replace the old pressed aluminium label on the still with a plastic one. He laboriously punched out the WA number and stuck it on the hot boiler of the still. He was disconcerted to see the embossed numbers immediately disappear. Undeterred he made another label and stuck it on the wall next to the still.

About a year later the water jacket rusted through and, deciding it as beyond repair, we scrapped it and removed it from the wall. We forgot to tell Admin. But it didn't matter as for several years after the stocktaker came along and was happy to record the WA number on the now blank wall!

Dave Salter

All that Glistens ...

As organic chemists we were obsessed with the idea of melting point as a criterion of purity. The trouble with modern high explosives such as RDX or HMX is that they decompose rather than melting. One way to determine the melting point of such sensitive materials is to use a Bertholet Bar - a metal bar heated at one end thus producing a temperature gradient along the bar on which the crystals were sprinkled and then observing at which point (ie temperature) on the bar gave an instantaneous figure. The trouble was that the bar was made of copper and one is not sure whether one observes a melting point or reaction. We had the idea of using a non-reactive noble metal and proposed a gold plated bar that Johnson-Mathey were willing to make for us. It all worked fine except that the bar took about a day to come to equilibrium. No problem - we just left it on all the time. Trouble arose when the stocktaker turned up to record such an obvious asset as a gold-plated bar. We watched, so sympathetically as he attempted to punch a WA number on a red hot bar. We eventually reached an accommodation with Admin. That a bar that was permanently red hot was unlikely to wander. I wonder what happened to our golden bar when Waltham Abbey finally closed?

Bob Simkins

TROUBLE WITH STOREKEEPERS

Charlie Carrington in the North Site Chemical Stores was always the most helpful individual, provided you didn't upset him or upset his tea break and stayed the right side of his 'barrier' unless invited over.

In the days of real research I was charged by my Superintendent, Ray Williams, to prepare potassium nitroform (a tricky process). In the pure state it was a white crystalline solid when it was completely dry and had to be kept in a vacuum desiccator over phosphorous pentoxide desiccant.

Charlie was 'Out of Stock' at the time and 'minimum order' requirements ruled. "Don't blame me" he said "You get on to Them Up There. I can't order in until the last bottle has gone". It had, so I phoned Them Up There and relayed my plight. "Can't be done, this month's order has gone, you'll have to wait". After trying other labs with out success (they weren't prepared to let go of their supply as they would then be in the state as me). Something snapped; I phoned Them Up There again, no joy, so I facetiously inquired "What would happen if the Stationery Office ran out of ink". This brought an immediate response from the Head of Them Up There who phoned My One Up There to complain that I'd made one of his girls cry!

I was asked to explain myself! Support from above (My Above) was forthcoming and BDH sent a bottle by express overnight.

Charlie seemed to get what he wanted after that if you mentioned that you were working on something unstable and I was in his good books forever after.

Two weeks later, during a brief period out of the desiccator the unstable compound fumed off violently, blew the gutta percha stopper out of the bottle which hit my colleague, Eddie Gallacher, on the head and turning the inside of the fume cupboard a bright orange. I wasn't asked to make a second batch

Geoff Howell

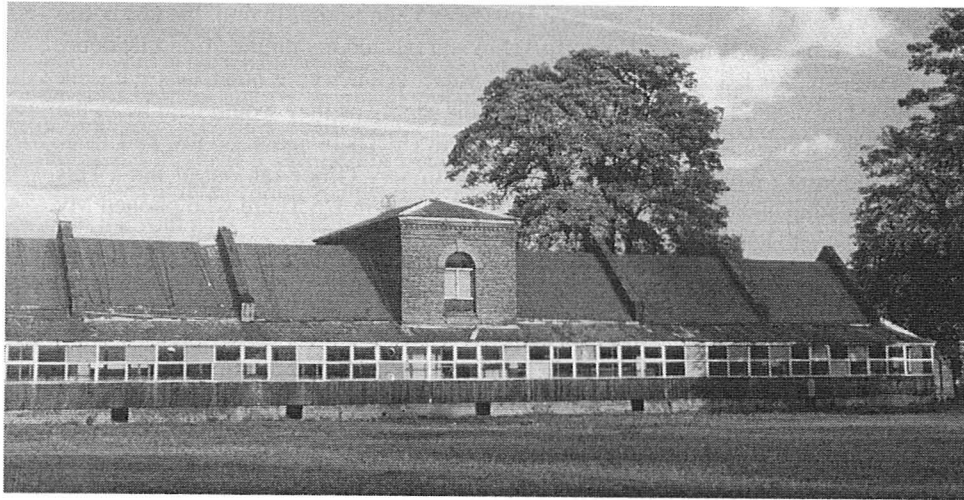
W E Batty - an appreciation

Mention in the last Touchpaper of this gentleman and his sensitive substances recalls an occasion when I was on my way to see J V Griffiths (who worked with him in L151) and got waylaid. "Come and have a look at this" he cried. Entering his lab. He produced a cardboard pillbox about 10cm in diameter and removed the lid to reveal a quantity of lustrous orange flakes which he proceeded to shuffle about. "F of I of 4" he said proudly, "Very interesting" I said retreating a pace or two and preparing to leave. On my way out I noted a vacuum distillation in the armoured cupboard with about 150 mls of an oily liquid refluxing in the column and I enquired, politely (as one did) what was happening. 'I thought I'd fractionate some nitroglycerine' was the reply. Commenting that I understood that the armoured cupboard was only designed to cope with 1 oz. of tetryl I left even more speedily than I had originally intended.

Jim Jeacocke

FUTURE ARTICLES

One of our members, Les Tucker, is a keen amateur archaeologist and has been carrying out some research into the history of many buildings on the Site. Les has now agreed to write a series of papers giving the history, the design and uses of many of the buildings. Initially he proposes to concentrate on the 21 listed buildings but hopes eventually to include all major structures.



Each building, or groups of buildings will be looked at in more detail than can be reproduced in Touchpaper but, in a series of articles, we will print the basic facts together with location and pictures.

It is intended that each detailed pamphlet will be published separately and made available to members at reasonable cost. The Operating Company Board have welcomed this initiative and copies will also be made available in the visitors shop. It may even be possible, when the series is complete, to assemble the entire set as a full publication. Bearing in mind the number of buildings and structures this may be some years in the future.

Look out for the first in the series in our next issue.

TOUCHBYTES

Memorabilia

The item in the June Touchpaper regarding souvenirs or trophies made me wonder what happened to the Rifle Club shield that had a central position in the Social Club trophy cabinet. The heavily embossed shield was called the 'Challenge Trophy RGPF Rifle Club'. Dated 1908 it was shot for annually up until 1914 by Sections within the RGPF. I remember that the Guncotton Section won it more than once. I do not believe it was shot for again until the ERDE Rifle Club took it over in the 1950s.

When I had it in 1975 it hadn't been cleaned for years and the metal was black. I thought it was solid silver but after careful cleaning with a toothbrush I think it was only silver plated.

After the Establishment and Social Club closed I was told by a Club ex-committee member that it might be offered to the local museum but, wherever it is I hope it can be recovered. My interest lies in the fact that my name appears on it more than once!

Stan Wills

I believe that it is in a safe place but will chase this up and hopefully recover this important trophy Ed.

Westcott Reunion

The 'Westcott Pensioners' from the sister establishment are holding a reunion on 17th March next year and would welcome any ex-Waltham Abbey workers who had cooperated with the rocket work at Westcott.

If interested please contact John Harlow on 01525 270138 or e-mail john@jharlow.fsnet.co.uk

A Double Diamond Celebration

Although Arthur Witham and Dicky Doe had been colleagues and friends since before WWII it was only in the early 1970s that they discovered that they had both been married on the same day - the 28th September 1940.

Dick and Doris's five sons arranged for the Diamond wedding anniversary of their parents to be celebrated at Gasfield Lake Golf Club near Halstead on Saturday 30th September and invited Arthur and Gladys to join the party.

Among the guests were many other ex-colleagues including Geoff and Pam Colley and Vic and Dorothy Clifford.

We wish to add our best wishes to the two happy partnerships.

REMEMBER

**DEADLINE FOR THE
MARCH ISSUE:
15th March 2001**

CHRISTMAS CARDS

This year's cards were very popular. We have sold most of the 750 printed with just a couple of dozen left, if anyone is interested.

We intend to repeat the exercise next year but with a different picture. The past two years we have sold cards at just above cost price as a service to members. Next year, as part of a fund raising exercise, we may increase the price but they will still be affordable.



BOOK REVIEW



November saw the London launch, at the National Army Museum, of the long awaited book 'Dangerous Energy' by Wayne Cocroft of English Heritage.

This book details the development of explosives from the early days of Gunpowder to modern developments of explosives and rocket propellants. Most of the book deals with the history of the Royal Gunpowder Factory at Waltham Abbey and should be of great interest to all members.

This is an authoritative textbook which, being specialist in nature commands a higher price than mass market publications but to those interested in the subject is well worth the cost of £45.

When the Site opens it will be on sale in the visitors shop but advance copies can be obtained from:

English Heritage
PO Box 229
Northampton
NN6 9RY

or by telephone on their credit card hotline 01604 781163

POST CHRISTMAS CONNECTIONS

It was just after Christmas and down at the old Powdermills five workmen (**Jack, Julian Jake, Jeremiah** and **Jim** aged **20, 25, 40, 50** and **60**) had gone to their rest hut for their lunch break. Some joker had switched around the food they had all brought in and there was a lot of argument as to which was whose.

Being just after Christmas the lunch food was the usual left-overs (**bread & cheese, bread & ham, boiled eggs, a turkey leg** and **a meat pie**).

The men could all be distinguished by the colour of their hair (**Brown, Blond, Black, Grey**, and in one case **no hair at all**).

Julian, who had blond hair, brought bread and ham and was 15 years younger than Jack.

Jim had brown hair, didn't eat meat and was the youngest. The oldest had grey hair and a biblical name.

The 50 year old with black hair had brought a pie, the 60 year old a turkey leg and Jack's food resembled his head!

Can you work out what each man had brought, his age and the colour (or lack) of hair.

A really easy puzzle so we suggest that you try it on Christmas afternoon or Boxing Day when you aren't feeling quite so bright