

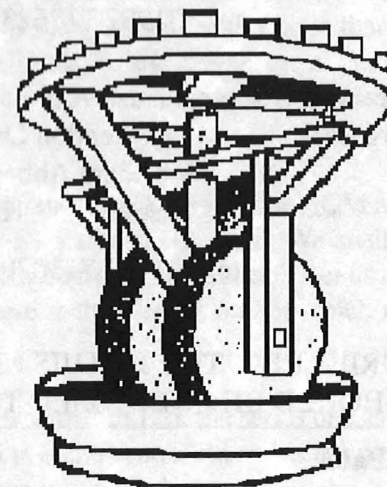
**ROYAL  
GUNPOWDER  
MILLS  
WALTHAM ABBEY**

'TOUCHPAPER' ©

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# **Touchpaper**

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



**JUNE  
2001**

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



## EDITORIAL

Well at long last the Site is open to the public, the first members of the general public came through the doors on Thursday 17th May.

Despite all the trials and tribulations Phase I was completed in time for the Royal Opening on the 16th (but only just!). A full report of the official launch is contained in this issue.

I must say that the Company and its contractors have done a really good job and the transformation is really astonishing. I hope that all of you will manage to visit at least once, if only to take advantage of your discounted ticket as a member of the Friends - provided, of course that you renew your subscription which is now due!

Please, also note that we now have a date for the AGM and Reunion in October where we hope for a good turn out again. We shall continue to use the good offices of the British Legion until a suitable venue can be found on Site. The major difficulty there is that there's no bar which might dampen a few spirits.

This issue also continues with Part II of the series on Listed Buildings by Les Tucker. Once again this is in the centrefold and is not page numbered so that, if you wish, you can keep it separately.

I hope you like the new cover design - its still a 'light blue touchpaper'!

Norman Paul



## ASSOCIATION NEWS

### MEMBERSHIP RENEWAL

Subscription renewal is now due with no increase in rates. Enclosed with members copies of this issue is the annual renewal form. As soon as your renewal is received we will send you your new membership card(s) which you will need to show for the generous reduced rate when visiting.

**With the Site now open we are entering a new phase of our operations and to this end we are actively seeking an expansion of our efforts:**

### VOLUNTEERS

We are still looking for volunteers to help man the site and assist our visitors. As a volunteer you will be eligible for free entry even for 'off-duty' visits. As the site is open 7 days a week helpers are needed on all days but especially at weekends and when special events are being held. To register as a volunteer please contact the Secretary (details on inside front cover).

### WORKING PARTIES

In addition to the volunteer programme we shall continue to hold regular working party sessions. At the moment these are held each Friday morning. The regular group carry out many small jobs ranging from gardening to minor repair. We will also be carrying out some special projects to add to the attractions on the site. The current one of these is the construction of a model water wheel which was reported in the last issue. Just come along to the Lodge on a Friday morning and meet the gang.

### ADVANCE NOTICE OF AGM AND REUNION

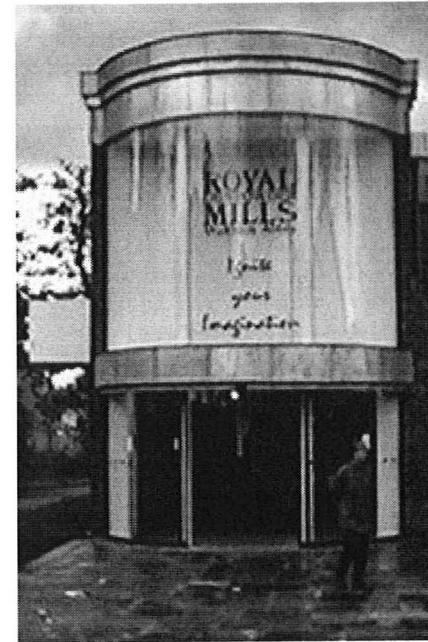
Please note that the AGM and Reunion will be held at the British Legion Hall on Friday 6th October. There are likely to be some changes to Committee and Officeholders at the AGM so it is important that as many of you as possible can attend. Full details in the September issue.

The Reunion will take place after the AGM and the cost, including buffet, remains the same as before at £6 per head. For convenience you can book your place at the Reunion at the same time as you renew membership.

### REMEMBER

**Don't forget your membership card if coming on a visit to the site to get your discount.**

## THE OFFICIAL OPENING



The site was due to open on April the 6th with a party of civic and other guests but due to restrictions imposed by the foot and mouth outbreak had to be postponed. A second royal opening by the Duke of Gloucester was scheduled for 16th May and in the event the two were combined. This did mean that some original invitees were disappointed as we simply could not cope with the combined lists but this was unavoidable. Even so it was still a bit of a crush, especially since, due to the weather, the actual opening ceremony had to be held in the cafe building which wasn't really large enough to fit everybody in comfortably.

Nevertheless it was a good day and was considered to be a great success. From the many comments heard it seems that people were very impressed with what has been achieved in this, the first phase of development.

Guests were given the opportunity to see a screening of the introductory film in the lecture theatre and to tour the main exhibition. There were also displays in;

- L167 - Transport and Fire Exhibits
- L168 - The Munitionettes Photographic Exhibition
- A202 - Lock Stock and Barrel (guns hardware)
- A201 - Tom Hunter Photographs
- A200 - Archive Centre



Shown here in L167 are one of the narrow gauge railway engines, now restored and the most complete powder boat which will require some restoration.

This barge was restored on two occasions in the 1960-7's by the ERDE apprentices but the ravages of time have once again left their mark.



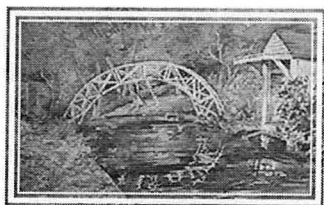
## SITE OPENING PICTURE GALLERY



The Opening Ceremony was performed by the Duke of Gloucester who unveiled a brass plaque commemorating the occasion.



The Duke was presented with a specially commissioned watercolour by Freda Titford to mark the occasion



view from Loop Bridge  
Old Magazine and Semicircular Bridge



Members of the Napoleonic Association gave a demonstration of musket firing during the afternoon -



- and acted as honour guard for the Duke of Gloucester, seen here taking his leave.



In the late afternoon a fireworks display was given on Queens Mead which, being in daytime was aural more than visual but nevertheless most effective.

## LISTED BUILDINGS AT THE ROYAL GUNPOWDER MILLS

by Les Tucker

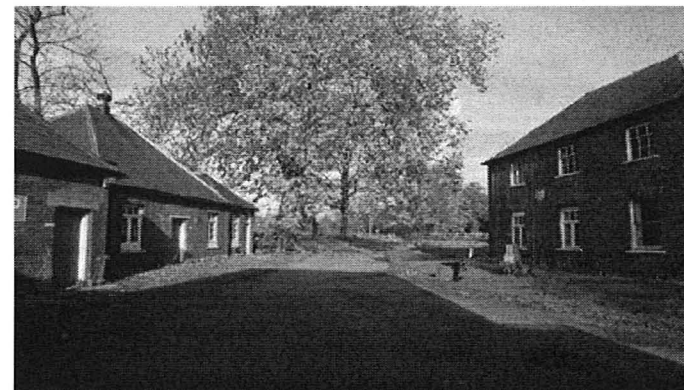
### PART II

#### THE "1787 GROUP"

The three buildings here are:

- |                              |                   |
|------------------------------|-------------------|
| A200 Walton House            | - Listed Grade 2  |
| A201 Mixing House            | - Listed Grade 2* |
| A202 Saltpetre Melting House | - Listed Grade 2* |

The term "1787 Group" has been used since the three comprise a grouping on the Island site where the original composition or mixing house and material preparation date from the Walton mills when the Government took over in 1787. Walton House was the Government administration building. The Government paid £10,000 for the Mills, bringing to an end the train of Walton family ownership which had passed through successive generations from 1702 after purchase from the Hudsons.



'1787 Group' (Walton House to the left)

These are the only surviving 18th Century buildings and the oldest on the site. They are situated by the newest building, the Establishment Library, built in the mid 1960's which now houses the Site Exhibition Centre.

The Government purchase had been made on the recommendation of Major, later Lt. General Sir William Congreve, at that time Deputy Comptroller of the Royal Laboratory at Woolwich and followed the previous Government purchase in 1760 of the Home Works at Faversham, also made on his recommendation. Congreve's recommendation was opposed to Pitt's view that Faversham should be 'privatised' on cost savings grounds and Congreve therefore had a deep vested interest in the success of both purchases.

Immediately following transfer of ownership Congreve instituted an extensive programme of repair, refurbishment and new building. Many difficulties were encountered, particularly with water supply, and production did not recommence until 1789. The programme had cost, including the purchase of competing water users - corn mills at Cheshunt and Waltham Abbey, the considerable sum of £35,000 represented a significant investment, reflecting the importance placed on providing a secure and controllable gunpowder source by the Government. It seems possible that the realisation that the Mills were going to need this order of expenditure to retain their dominant position was an influencing factor in the Walton's willingness to sell.

At the end of 1787 James Wright was appointed 'Storekeeper - Head of Establishment' at a salary rising to £300 p.a. He was assisted by a Senior Administration Officer, termed 'Clerk of Cheques'. In 1788 William Newton was transferred from Faversham and appointed 'Master Worker' at a salary reaching £130 p.a.

#### **A200 WALTON HOUSE 18th Century**

Management required premises to carry out their functions and house their staff and the building now termed Walton House, originating earlier in the 18th century was utilised. The original building was two-storeyed, of two bays by one bay, in red/brown brick of rectangular form in Flemish bond. The roof was hipped with pegged trusses (original carpenter's marks still visible). In the 19th century various extensions were added. In the early part of the century a third bay of two storeys was added on the north side then, from 1860 a two storeyed wing two by two bays and another two storeyed wing. These additions resulted in the building ultimately having a U shaped plan. There was a progression of official titles - Storekeepers Office, by 1865, Superintendents Office and by 1917 the Main Offices. In 1865 plans were drawn up for conversion to Master Workers living quarters but it is not clear whether this ever took place. The shield on the frontage with animal head and winged angel appears to relate to previous owners rather than the Waltons. Perhaps, not surprisingly, in view of the large number of additions and the high water table, settlement has taken place. This is visible but to determine on which side is not as straightforward as it might appear. Certainly the north side has a considerable lean as evidenced by the sloping internal floors.

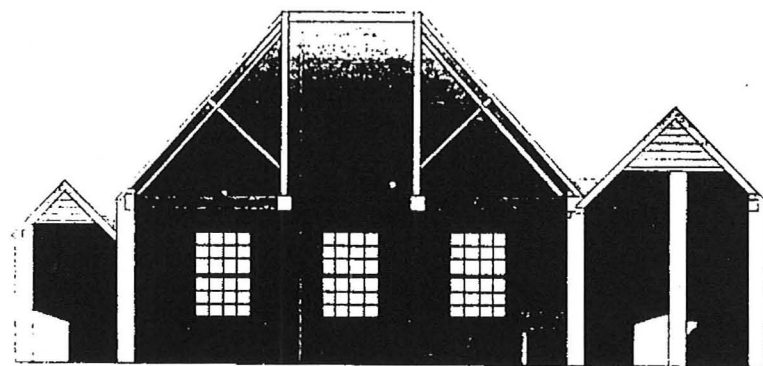
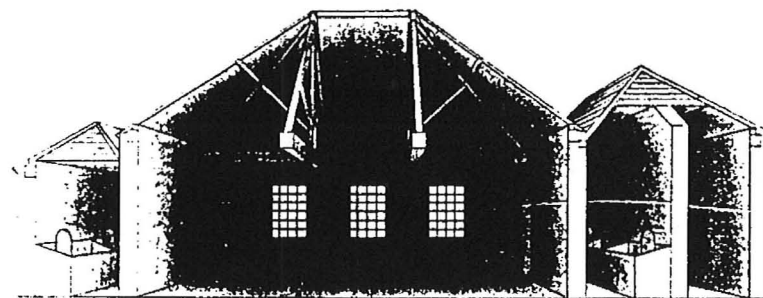
#### **Lt.General Sir William Congreve**

When the mills were purchased the science of chemistry had barely started, control of the manufacturing process was loose and quality was a constant problem. Of particular importance was the need to secure not only better performance but greater uniformity. Congreve was a visionary who saw that the way forward lay in scrupulous attention to purity of ingredients, precise measurements, close study of each stage of the process to introduce improvements where possible. These considerations might now seem self evident but in that time needed strong direction and control to be achieved. William Congreve was succeeded in 1814 by his son, also William, as Comptroller of the Royal Laboratory, including supervision of the Royal Gunpowder Factories, and continued the emphasis on quality, measurement and machinery improvement. He was responsible for the patenting in 1815 of important mixing and granulating machine designs.

#### **A201 Mixing House 1787**

The building of a new mixing house was an expression of Congreve's concern for purity of ingredients and for close control, establishing a milieu in which his precise instructions for proportions could be carried out. The process involves the mixing of the three ingredients of gunpowder - saltpetre, charcoal and sulphur, normally in the ratio of 75/15/10. Saltpetre and sulphur having been previously refined, all three ingredients were separately ground and sieved to provide the uniform consistency for the following process of incorporation into actual gunpowder.

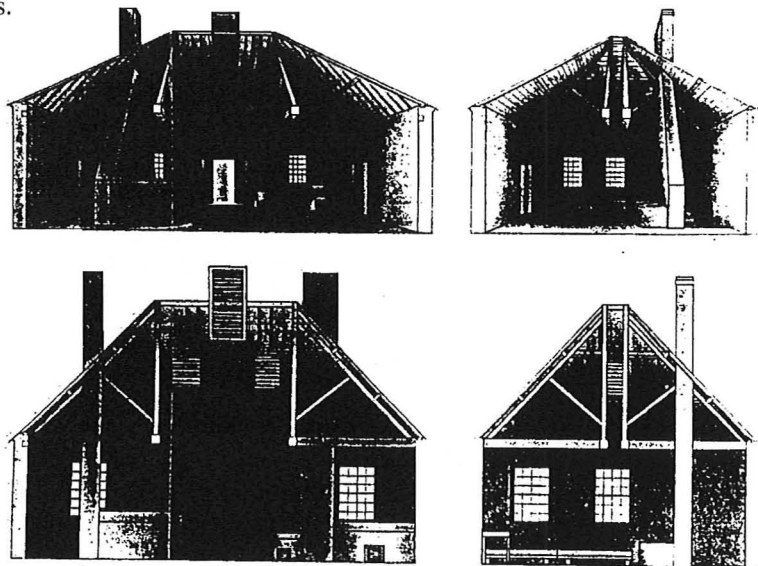
The building is of red/brown brick in Flemish bond with a pyramid shaped roof. The roof trusses in the original part of the building are timber with a tie beam, king posts and struts. An addition to the north side at a lower roof level was made in the early 19th century and the south side also extended. The present flat roof link to building A202 was probably a replacement of this south extension. In common with other buildings A201 passed through a series of titles and functions; by the mid 19th century the original part was a Powder Store and the northern addition a Barrel Store. By 1886 the description was Storekeepers Office and Store, by 1908 Drawing Office with the flat roofed link a Laboratory Store and the northern extension a Visitors Danger Building Office. In 1830 the Board of Ordnance commissioned a study from Frederick Drayson of the operation of the Mills with a view to possible restructuring. His submission included a series of drawings of the buildings and processes.



### A202 Saltpetre Melting House 1787

A202 is immediately south of A201 and is linked to it by a flat roofed block. It is of red/brown brick in Flemish bond with a pyramid shaped roof with tie beam/king post roof trusses. A saltpetre boiling house was situated on the south side but was later replaced. Again a succession of titles/functions - Melting House, by 1827 Sulphur Mill, 1865 Washing Up House and Store, 1886 Master Workers Office, Laboratory and 1908 Cordite Foremans Office.

In the 1960's a new Library building was erected to the south of A202 and both A201 and A202 were linked to form an overspill archive for scientific journals and photocopying facilities.



Saltpetre refining was a significant and expensive part of ingredient preparation. Increasing demand placed on it were reflected in new building. In 1806 a new refinery was built adjacent to the existing Walton plant at the junction with Highbridge Street and what is now Bealieu Drive. In 1827 a major new refinery on the other, eastern side of Millhead was built and this survived until the end of gunpowder production.

**The significance of the 1787 Group in the chronology of the Mills is; in physical terms as the oldest surviving buildings and the embodiment of structures of the 18th century gunpowder industry. Technically, they represented the start of a rationalised approach to manufacture introduced by William Congreve involving all stages of the process from purity of ingredients, precise measurements, close control, machinery improvement and economy of operation, progressively establishing the Mills over 200 years as leaders in their technology.**



## THE PUBLIC OPENING

**Following the Official Launch on Wednesday 16th May**

**The doors opened to the public the next day.**

Weatherwise it was probably one of the worst days in recent weeks with continuous heavy rain and strong cold winds. Nevertheless, when the gates opened at 10.00 we were surprised to see our first visitor waiting to come in. He had his photograph taken and was presented with a souvenir paper weight. During the day there were a trickle of visitors but we were really waiting for the weekend which was a special half price event, mainly for the local people.

Over the weekend there were special events with the 'Powder Monkey' in attendance and Nature and History Trails for children and adults devised by Gillian Norris, our Education Officer. These were very well received and created a lot of interest.

Sunday was the best day with well over 300 visitors. The Land Train ran continuously throughout the day being very well patronised. A special display was also given by the Essex Militia Group with demonstrations of cannon and musket fire on Queens Mead. Altogether it was a good and promising start to the opening for which we have waited for so long.

### PROPOSED SPECIAL EVENTS PROGRAMME

**SUBJECT TO CHANGE - CONTACT THE COMPANY FOR UP TO DATE  
DETAILS ON 10992 767 022 OR VISIT THE WEBSITE AT  
[WWW.ROYALGUNPOWDERMILLS.COM](http://WWW.ROYALGUNPOWDERMILLS.COM)**

MAY	26-28	The Gunpowder Games	AUG	4-5	Victorian Weekend
				11-12	Craft Fair
JUNE	2-3	Napoleonic Association		18-19	Secret Landscape Tours
	9-10	Gunpowder Nature Trail		25-27	Napoleonic Association
	16-17	Father's Day Special	SEPT	1-2	Historic Buildings Tour
	23-24	Secret Landscape Tours		8-9	Science Weekend
	30-31	Powder Monkey Picnic		15-16	Photography Masterclass
JULY	7-8	July 4th Fireworks		22-3	Napoleonic Association
	14-15	Napoleonic Association		29-30	Hibernation Nature Trail
	21-22	Essex Militia Re-enact.	OCT	6-7	Autumn Leaves Trail
	28-29	Music at the Mills		13-14	Secret Landscape Tours
				20-21	Napoleonic Association

**N.B. SEPTEMBER 8-9 SCIENCE WEEK-  
END WILL BE RUN BY THE FRIENDS**

**27-28 CLOSING WEEKEND  
BONFIRE PARTY**



## RGPF IN DERBYSHIRE

My model of the RGPF railway made it to the annual exhibition on 24 February – but only just - the locomotives arrived only three days before the exhibition! The project, including research, was over ambitious for one year so during the last three weeks I had to work full time to meet the deadline. Eventually it took over the lounge completely.

The main source of information for the railway system was J Jenkins article in the Industrial Railway Society Record 117. Many thanks to the many members of The Friends and WARGM who provided drawings and information. Photographs and measurements taken during several visits to the site were used as the basis for models of surviving buildings.

The model is to a scale of 6mm to the foot, determined by the use of 9mm gauge track to represent the 18 inch gauge prototype. The three types of locomotives used on the Waltham Abbey system pull trains of 4 wheel and bogie wagons. The following features of RGPF are rearranged on the 16 foot long model: semicircular bridge; building L135; covered powder barge; last water powered gunpowder mill; building L145, as in WW2; reel house (H10); mounded reel store; swing bridge; acetone drums being loaded onto barge; and the Lady of the Lea – not yet completed.

Some refinement and additional detail is still required. At the moment it requires two operators. I am considering making it automatic or semi automatic operation. The model was well received and many of the WARGM leaflets were taken.

An old colleague, Mike Bagley, visited from Sheffield – he had worked in L145 and H10 – but not in the periods I depicted! If possible we will bring the layout to the Powdermills later this year.

Tony Barratt

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## It's an Ill Wind .....

The photograph in the March 2001 issue of the V2 rocket, reminded me of the escapade Les Cole and I had with Mrs May (landlady of the Ordnance Arms) about which I wrote some time ago. It was however, the remark about the Home Guard Drill Hall which provoked another memory

The Drill Hall also contained the Quartermaster's Store and we all knew that the Home Guard would one day be stood down and a reckoning required, we also knew that a reconciliation was impossible because of the numerous 'private' deals carried out by the quartermaster Sergeant (If you ask me if I was a party to these I will plead the 5th amendment).

It was not surprising, therefore, that, apart from one or two mangled ledgers the entire records of the stores were destroyed in this incident, as was the remains of any stock!

Jim Jeacocke

## The Black Hole in Newton's Pool

Newton's Pool was the E Branch facility for underwater explosives testing. At a maximum depth of about 7m, and with charges suspended at mid-depth, it allowed the measurement of free-field shockwave parameters out to about 2m from the charge. The normal maximum charge weight was 8lb TNT equivalent, and most firings were with charges in the range 1 - 8 lb (in those days we still used a peculiar mix of imperial and metric measures).

A spectacular plume of water some 30m high would signal the test firing of a big charge, and a powerful ground-borne thump would shake the control and instrumentation building on the poolside.

One day, when the firing button was pressed, nothing happened. When the rig was raised, we saw that the 8lb charge was no longer attached. The detonator had functioned but the booster had failed, and fragments of the detonator case had severed the cords holding the charge, which was now lying somewhere on the bottom.

I had always wanted to explore the bottom of Newton's Pool - could this be my chance? In the summer months we often enjoyed a quick dip in the pool to cool ourselves off, but I had always wanted to bring in my aqualung to have a proper look around the bottom. It took a bit of persuading George Whitbread and Griff (Safety Officer at the time) to agree, but in the end they agreed subject to my having a safety line attached to the aqualung harness.

The water was surprisingly clear when, a few days later, I swam out to the middle of the pool. I found the bottom to be quite firm and smooth, with few large stones and none of the assorted debris one find in similar pools with public access.

In the middle, however, things were different. There was a circular depression, about 2m wide, and which looked pitch black. I found it was a pit, full of an oozy black mud. The happy chirruping of my exhaled bubbles changed to a dull gloop, gloop as I pushed down into it. The underwater torch I had brought was useless - even pressed against the visor of my mask I could only just confirm it was turned on.

I was reduced to groping around blindly with my hands trying to locate any large lumps, but there appeared to be no firm bottom - just an increasing viscosity with depth.

It wasn't long before it became clear there was very little hope of finding anything, so I gave up, extricated myself from the mud and swam back to report my findings to George and Griff. They seemed to be somewhat relieved that they weren't going to have to explain how one of their staff had got himself drowned in Newton's Pool.

So we were still left with 8lb of unexploded Poly-X somewhere in the bottom of the pool. After much deliberation, it was decided to carry out a countermining operation. A large charge of R/T was lowered into the mud on the bottom and detonated. But it wasn't half as much fun!

Jim Hawkins

## TOUCHBYTES

ONLY ONE ITEM IN THIS SECTION THIS TIME  
WE AWAIT YOUR FUTURE CONTRIBUTIONS

About 20 years ago our daughter Val was collecting information about the lives of women living in Otago, New Zealand. On one occasion she drove from Dunedin to Queen's Town and followed a road round Lake Wakattipu and finally a dirt track to an isolated homestead. Early in the interview it was established that the lady had lived in Honey Lane, Waltham Abbey and her father had been a foreman in the Mills. She and her sister, craving adventure, had sailed to New Zealand in the 1920's. It was 10 years later that Val saw her again when she was living in Christchurch with her sister. I had hoped that Val would provide a more detailed account for Touchpaper but she has been a very busy girl. This has included working at Canberra and the South Pacific University in Fiji. She was an enthusiastic member of the PERME Sailing Club and more recently has sailed a small yacht, with her family, from Australia to New Zealand to Fiji so she has much in common with the ladies of Honey Lane. Vic Clifford

### PLEASE REMEMBER

DEADLINE FOR THE  
SEPTEMBER ISSUE:  
15th August 2001

## GUNPOWDER & EXPLOSIVES HISTORY GROUP

We reported in the last issue the change of name of the Gunpowder Study Group which was set up in 1985 with Alan Crocker, Glenys Crocker and Phil Philo as convenors. Phil's museum duties took him to the north-east but Alan and Glenys continued to organise the Group assuming the roles of: chairman, secretary, treasurer and editor and chief contributors to their newsletter. As reported Alan and Glenys found that pressure of work was such that they wished to hand over to others. Response from members was overwhelmingly in favour of continuing with the Group but that its remit should be expanded - hence the new title.

Officers of the new Group are:

**Brenda Buchanan - Chairman.** Brenda is also well known to many of us and has been very active in the development of the Waltham Abbey Site and was appointed by the Science Museum as its Foundation Trustee.

**Wayne Cocroft - Editor of the Newsletter.** Wayne is an investigator with English Heritage and is well known to many of our members.

**Kenneth Major - Treasurer.** Kenneth is an architect with a personal and professional interest in mills.

Those wishing to join this academic group should contact the Treasurer at; 2 Eldon Road, Reading, Berks, RG1 2DH. Subscriptions are £5 per individual, £7.59 joint membership and cheques should be made payable to G&EHG

## MISCELLANY

### COMPUTER GENDER

As you know, in the French language all nouns are of either masculine or feminine gender. But what about modern words. Apparently no decision has been made on the word computer. Is it Le or La Computer? A french dictionary doesn't help so a group of people were asked which it should be. Men opted for the feminine *la computer* whilst women preferred the masculine *le computer*.

### THE REASONS GIVEN WERE:

#### FOR MEN

No one but the creator understands the internal logic.

The native language they use is incomprehensible to everyone else.

Even the smallest mistakes are stored in long term memory for later retrieval.

As soon as you make a commitment to one you find yourself spending half your pay cheque on accessories for it.

#### FOR WOMEN

In order to get their attention you have to turn them on.

They have a lot of data but are clueless.

They are supposed to help you solve problems but half the time they are the problem.

As soon as you make a commitment to one you realise you could have got a better model.

### HOW LOGICAL WERE YOU ?

#### ANSWERS TO LAST ISSUES PUZZLE

- |                            |   |
|----------------------------|---|
| 1. None. Not Moses - Noah. | 2. All of them.                         |
| 3. 70                      | 4. One (each year)                      |
| 5. The match.              | 6. Because he is still alive.           |
| 7. 10p and 1p.             | 8. there isn't any soil in a hole.      |
| 9. No your'e dead.         | 10. You drove therefore it's your name. |