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Gunpowder Mills Study Group

NEWSLETTER 7, MAY 1990

**SUBSCRIPTIONS 1990-91**

A subscription of £3 (individual) and £4 (joint) was due on 1 April 1989, to cover the cost of future newsletters, postage, photocopies etc. Please send your remittance to Glenys Crocker at 6 Burwood Close, Guildford, Surrey GU1 2SB, with the return slip enclosed. An updated list of paid-up members will be circulated in late August, together with further details of the October meeting.

**NEXT MEETING**

**BIRKBECK COLLEGE, MALET STREET, LONDON WC1E 7HX  
SATURDAY 13 OCTOBER 1990, 10.30 - 16.30**

The programme will include a talk by Ken Major on Recording Mills. Also, anticipating that we will hold a

**VISIT TO CUMBRIA IN SPRING 1991**

we are arranging to have a talk on the gunpowder mills of the Lake District. We would also like to include some short talks - please let Alan or Glenys Crocker know if you would like to make a members' contribution. Further details will be sent out later.

**SECRETARY OF THE GROUP**

Elizabeth Tough who has been the Group's Secretary for the past year will be unable to continue as she is going to Aberdeen in September to study for her Post Graduate Teacher's Certificate. Thanks to Elizabeth for her contribution to the work of the Group. If any member would like to take over as Secretary, would they please get in touch with Alan or Glenys Crocker.

**REPORT OF 1989 AUTUMN MEETING**

A meeting was held at Birkbeck College, University of London on 14 October. Alan Crocker gave an illustrated account of the Group's visit to Denmark in July (reported in Newsletter 6) and this was followed by a talk by Keith Fairclough on the 17th century powdermaker John Samyne. The text of this is printed below. During the lunch break there was an opportunity to look at a volume of 39 engraved plates of a French powder manufactory of 1811 which was brought to the meeting by Charles Trollope. The book is by Botte & Riffault and is entitled *Recueil de planches relatives a l'art de fabriquer la poudre a canon*. Unfortunately the text is missing and Charles would welcome hearing from anyone with access to a copy. In addition Alan and Glenys Crocker brought along a copy of Guttman's *Monumenta Pulveris Pyrii: reproductions of ancient pictures concerning the history of gunpowder ...*, published as a limited edition in 1906.

After lunch, Elizabeth Tough gave an illustrated talk on the Scottish powder mills, which the Group proposed to visit in 1990, and Tony Yoward gave a talk, illustrated with many old photographs, on the Schultze gunpowder factory at Fritham in the New Forest. Members' contributions included slides of the collection of gunpowder labels held by Alice Palmer, who has researched the early history of the Lowwood mills in Cumbria, and an account by a new member, Jim Lewis, of his project on the Royal Powder

Mills and the Royal Small Arms Factory at Waltham Abbey. This is part of a major project being undertaken by Middlesex Polytechnic and the Lea Valley Regional Park Authority. A short business meeting was held at which it was agreed to continue with current arrangements for the running of the Group. It was decided to go ahead with planning a visit to Scotland at Easter and an account of this tour is given below.

Michael Wilks was warmly thanked for making the arrangements for the meeting.

**JOHN SAMYNE: 17th CENTURY GUNPOWDER MAKER, by Keith Fairclough**

From the 1640s until his death in 1676 John Samyne(1) pursued a chequered, persistent, but ultimately unsuccessful career as one of England's most important producers of gunpowder. His career illustrates the problems common to the industry. Great variations in demand depending upon whether the country was at war or peace meant that there were successive crises of a shortage or an excess of production capacity. The resultant financial problems were only worsened by the fact that the major customer, the state, was slow in paying its bills, and disaster faced any producer because of the frequency of explosions which destroyed uninsurable production capacity.

In 1636 John Samyne was registered as an apprentice with the Grocers' Company, becoming a freeman in 1645. In the same year he married Elizabeth Chamberlain.(2) By August 1647 he was already producing powder at Walthamstow Mills in Essex along the lower River Lea,(3) but the lack of detailed ordnance records for the 1640s means that at present nothing else is known of how or when he first became involved in the industry. George Greenwood has suggested a family connection, citing the fact that in 1611 a William Samyne was dealing in ordnance,(4) but another possible link is the fact that a major supplier to the parliamentary authorities during the 1640s, John Berisford, was also a member of the Grocers' Company and was also producing at sites along the Lea, at Temple Mills in Leyton and at Sewardstone Mills further upstream.(5)

From 1649 Samyne is noted as a supplier to the government, and emerged as an important producer during the first Dutch War (1652-54), though Josias Dewey and Daniel Judd were more important.(6) The demands of this war meant shortages of imported saltpetre, so efforts were made to encourage production in England even though quality was inferior. Samyne was one of those who responded, signing a contract in December 1653 to produce 8cwt of saltpetre weekly in the several counties and towns of Essex, Norfolk, Suffolk, Cambridgeshire, Colchester, Ipswich, Norwich, Cambridge, Bury St Edmunds, Yarmouth and Lynn. In view of possible problems in fulfilling such targets, the contract specified 12 barrels of powder a week in lieu thereof.(7)

Samyne was soon to be in severe difficulties. In 1655 he complained to the Commissioners for the Admiralty and Navy that during the late war he had invested £2000 in erecting four new mills to produce 80 barrels a week, that he was committed to an annual rent of £22 for 21 years, and that these mills had cost him an additional £2000 since built. This investment in new capacity was an addition to his existing capacity at three mills capable of producing 50 barrels a week, and a saltpetre contract on which he claimed to have already lost £700. Such had been his problems that he had fallen ill and been sick for ten months, during which time 5 of his 7 mills had blown up. Not surprisingly he had fallen behind with his

contractual deliveries to the government and was heavily in debt. He asked the Commissioners immediately to pay him all monies owed him and give him a promise of constant work in the future. (8)

This petition and other evidence suggests that Samyne first set up business at Walthamstow Mills, that during the first Dutch War he took out a lease to a site at East Molesey in Surrey where he erected four new mills, and that both sites suffered damage through explosions. (9)

Samyne did recover. In 1657 he was repairing powder, in 1658 and 1659 he was delivering new powder. Between 1660 and 1664 he was sub-contractor to Daniel O'Neale who had been awarded a gunpowder monopoly by Charles on his Restoration, and he was an important producer during the second Dutch War (1664-67). During these same years he is noted both as an exporter of powder and producer of saltpetre. (10) One important change to his business and domestic arrangements is that in 1659 he moved from Fenchurch Street, where he had been based in 1655, to Bromley Hall, an estate along the lower Lea two or three miles from Walthamstow. (11) Yet he also still possessed the largest house at East Molesey. (12)

Samyne faced severe problems once again during the second Dutch War. In May 1665 he complained that workmen erecting a new powder mill at East Molesey were being threatened with arrest, and he needed the authority of the Ordnance Board to prevent such interference with the war effort. (13) Then on 5 July 1665 there was an explosion at East Molesey and much of the plant was destroyed, including all corning houses, petre houses, workshops and storehouses, along with 8½ tons of saltpetre, 4 tons of powder, and quantities of brimstone and coal. (14) In addition, his immediate efforts to rebuild the works met with opposition from local inhabitants who in May 1666 petitioned the King requesting that the mills be removed to a more remote site. (15)

In 1669 Samyne complained that the rebuilding of his works at East Molesey had 'Exceedingly exhausted his stock and made him incapable of continuing his trade' and once more he asked for government assistance in order to continue. He reminded them of his long history as a supplier, stressed that he had a wife, ten children, and a child of his brother dependent upon him, and drew attention to his services during the Great Fire of London when he 'had adventured his life in saveing as much of your Majesties Petre at ye Customhouse as made 150 barrells of gunpowder.' (16)

Once again he was to remain in the business, supplying the Ordnance between 1671 and 1673, (17) but the available evidence does suggest that his financial problems, which had existed before the explosion at East Molesey, had become so severe that he was unable to recover his former prominent position, was unable to hand over a flourishing business to his eldest son Peter and may even have withdrawn from the powder business during the last three years of his life, perhaps limiting himself to the saltpetre trade.

Such were the financial problems after his death that his executors had to obtain a private Act of Parliament (29 & 30 Car II, c.19PR) in 1678 to try and settle his estate, yet they still faced further legal squabbles. (18) From 1663 onwards Samyne had been forced to mortgage virtually all his property, to the value of at least £2700. In addition he had debts of nearly £1000 to two of his sons-in-law and over £200 to James Clarke, lord of the manor of East Molesey. In contrast his probate inventory shows that he had few assets, these being valued at £570 after funeral expenses, with another £144 due in rents. (19)

The inventory does not suggest a flourishing business. No production capacity is cited at Walthamstow Mills, perhaps because Samyne had already

passed it on to his son Peter (see below). There was some capacity at East Molesey, even though he had disposed of much of his estate there before his death, and had perhaps passed over much of the business to Peter. Shortly after his father's death, Peter leased the mills to James Clarke, lord of the local manor to whom his father was indebted. (20)

Walthamstow and East Molesey had been the main centres of John's business, but his inventory shows that there was a saltpetre house and a brimstone house on his estate at Bromley, that he had owned a wharf on the Thames in the parish of St Mary Somerset near the Tower of London since at least as early as 1666 (which suggests that he shipped raw materials and gunpowder by barge along the Thames and the Lea), and that he had a farm in Wiltshire and lands in Fordham in Cambridgeshire. In addition a codicil to his will mentions a property called Coldharbour Mills, about which nothing more is known at present.

Samyne had intended to recover from the explosion at East Molesey, even if he did fail. An indication both of this intent and subsequent failure is that in August 1668 one of his in-laws, George Chamberlayne of Moulsey, gentleman, purchased a head lease to the Temple Mills on behalf of John for £900. The mills were described as two mills under one roof and 6½ acres of meadow. Gunpowder had been produced on the site from the early 1640s to the early 1650s, but after that the situation is at present unclear, except that the property was derelict in 1668 and had been so for some years. (22)

The purchase of such a property close to Bromley Hall and Walthamstow Mills does suggest an intent to produce powder there, but if this was the case, then the evidence suggests that he was unable to invest in the necessary capacity, and that he was forced to sub-let the mills. In 1671 and 1672 rates on the property were paid by a Daniel Ham who then took up a lease on the nearby Abbey Mills at Stratford, where he ground corn until the 1690s. Yet a William Hams did sign a contract to supply powder in June 1673, so there is a possibility that Hams did have some brief experience as a powder producer at Temple Mills. Between 1673 and 1677 rates on the mills were paid by a Mr Mathewes, about whom nothing else is at present known. (23)

A further indication of Symne's failure is the fact that he was unable to set up his eldest son as a producer, even though this was obviously his intent. The fact that Walthamstow Mills were not mentioned in the probate inventory probably indicates that although John still owned the property, albeit mortgaged, his son had taken over the running of the business. Baker and Greenwood both state that a similar situation had arisen at East Molesey, and John wanted his son to be able to take over the Coldharbour Mills immediately after his death. Peter did continue in the business, but on a much reduced scale and at only one site, Walthamstow. Gunpowder was being produced at Walthamstow in 1678 and 1685, and a survey of the industry in 1687 noted that Peter Samine had a capacity to produce 4 barrels of powder a day at Walthamstow. (24)

Yet there is no evidence to suggest that Peter was ever a major supplier to the Ordnance, and only one reference to such a contract has been found, in April 1687. (25) It is likely that even this limited business was not a success, for in August 1690 the probate inventory of Peter Samine, late of St Brides in London, but who had died in Port Royal, Jamaica was submitted by his widow. She stated that he had taken his account books with him, and the few belongings recorded in the inventory were distrained to Edward Noell for rent of their dwelling house in St

Brides. (26) Peter had failed to pay off the mortgage on Walthamstow Mills and shortly after his death they were sold and converted to paper mills. (27)

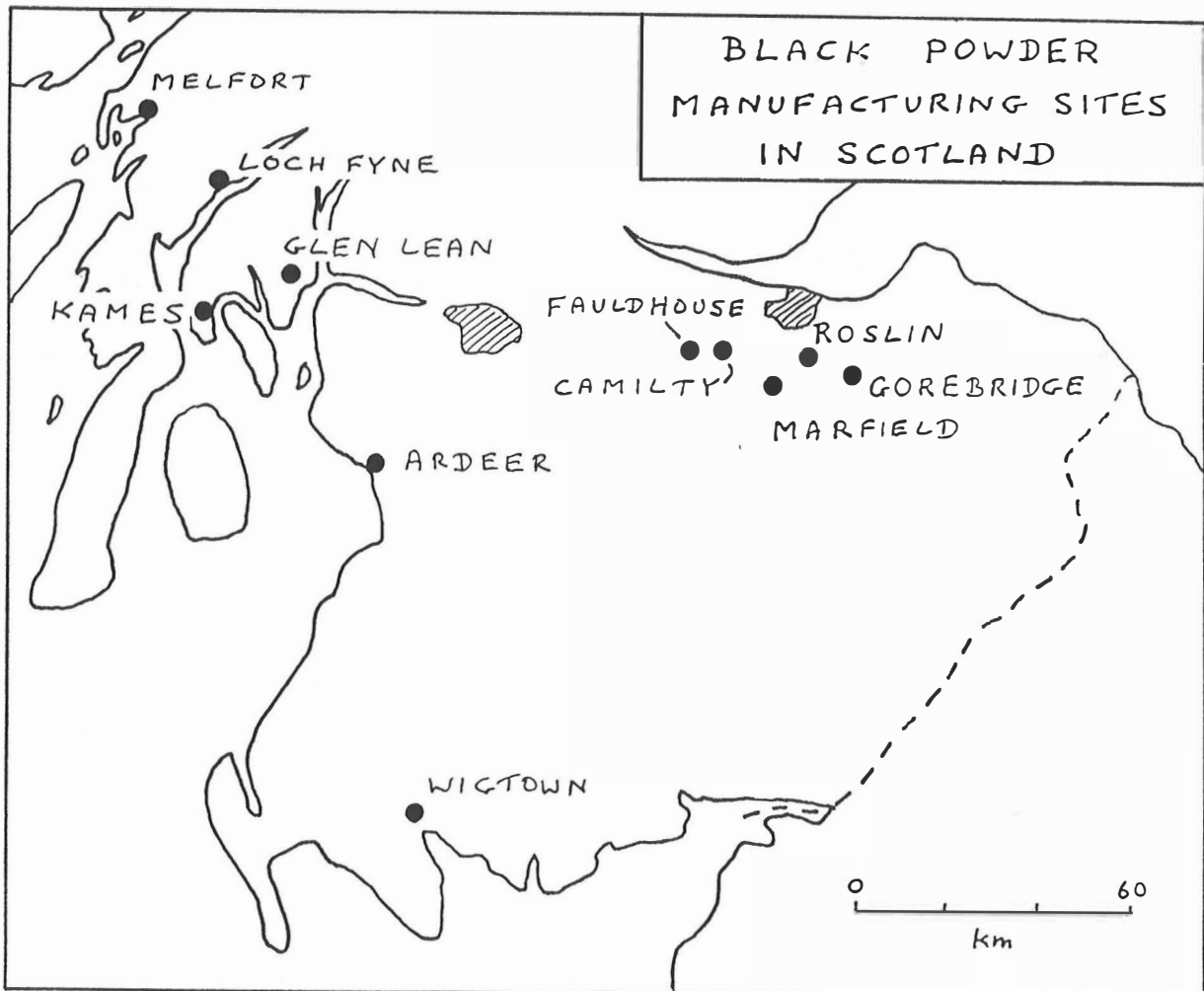
#### Notes

- 1 The name was variously spelt, including Samine, Semaine, Semayne.
- 2 Private communication from Rowland Baker. I would like to thank Mr Baker for information about Samyne and the mills and East Molesey and his widow for permission to cite his communication.
- 3 Vestry House Museum, Walthamstow, W83.1 R1, Register of Baptisms, Marriages and Burials, St Mary Walthamstow 1645-1712, 3 August 1647
- 4 Surrey Record Office, M53 5662, G B Greenwood, 'The Elmbridge Water Mills, Surrey'. Mr Greenwood cites *Historical Manuscripts Commission, Sackville Papers, Knole 1*(1940), 253
- 5 K R Fairclough, 'Early gunpowder production at Waltham', *Essex Journal* 20[1](1985), 11-16
- 6 *Calendar of State Papers Domestic 1649-50*, 584; *CSPD 1650*, 58, 146, 147; *CSPD 1651*, 178, 572, 576; *CSPD 1651-52*, 115, 144, 581; P.R.O., WO47/2, unfoliated, 8 July 1652, 8 December 1652, 28 December 1652, 12 July 1653, 22 August 1653, 21 October 1653; WO 47/3, fos. 326, 333.
- 7 *CSPD 1653-54*, 352, 369-70; P.R.O., WO47/2, unfoliated, 30 November 1653, 26 December 1653
- 8 P.R.O., S.P.18/94 nos.47-49
- 9 *Ibid*; Thames Water Authority Stronghold, Box 81 no.288 (now transferred to Greater London Record Office, not yet available to public (1989); Greenwood, *op cit*
- 10 P.R.O., WO 47/4, unfoliated, 25 May 1657, 23 February 1658, 26 August 1658; *CSPD 1660-61*, 195, 369; P.R.O., WO 47/5, fos.182, 219; WO 47/6, fos. 99, 122; WO 55/1756; *CSPD 1663-64*, 555; P.R.C., WO 47/7, fos.43, 72; WO 48/5, *passim*; WO 48/7, fo.251; WO 48/8, folios not noted; H C Tomlinson, *Guns and government: the Ordnance Office under the later Stuarts*, London, 1979, 114
- 11 P.R.O., WO 47/3. fos.148-49; WO 47/5, fo.219; E178/6340; E126/11, fos.148, 221
- 12 Private communication, Rowland Baker
- 13 P.R.O., WO 47/7, fos.73, 90
- 14 *Ibid*, fos.122. 132, 133; WO 47/19A, fos.411-12
- 15 *CSPD 1665-66*, 409
- 16 P.R.O., WO 47/19A, fos.411-12
- 17 P.R.O., WO 48/10, fo.273; WO 48/11, fo.177; WO 48/12, fos.71, 160; WO 48/16, unfoliated, 7 September 1673. Records for the 1670s no longer exist in class WO 47
- 18 P.R.O., C7 302/58; C10 69/127
- 19 29 & 30 Car II, c.19 PR; P.R.O., PROB 32/14/2-28
- 20 Personal communication, Rowland Baker; Greenwood, *op cit*, production continued at East Molesey for in 1687 Sir Peter Rich had the capacity to produce 12 barrels of powder a day there; P.R.O., WO 49/220
- 21 P.R.O., PROB 11/351(106)
- 22 London Borough of Hackney Library Services, M795-796; Fairclough, *op cit*; P.R.O., C6 193/4
- 23 Vestry House Museum, Walthamstow, L55.6 P1, Leyton Book of Parish Rates 1651-1704; Guildhall Library, MS 13532 nos.7, 8; MS 13539; P.R.O., PROB 4/15936; P.R.O., WO 47/19B, unfoliated, 13 January 1674, WO 48/12, fo.344

- 24 Vestry House Museum, Walthamstow, W83.1 T1, 9 September 1678, 6 November 1685; P.R.O., 49/220, WO 55/1758
- 25 P.R.O., WO 48/26, unfoliated, 14 October 1687
- 26 P.R.O., PROB 32/31/278
- 27 Thames Water Authority Stronghold, Box 81 no.288 (see n.9); Vestry House Museum, Walthamstow, W83.1 R1, 16 January 1691, 22 September 1694

**REPORT ON THE FIELD TRIP TO SCOTLAND: APRIL 13-18, 1990, by Alan Crocker**

During five days in mid-April nine members of the Group (Angus and Brenda Buchanan, Alan and Glenys Crocker, Miles Oglethorpe, Chris Snape, Malcolm Tucker, Mary and Tony Yoward) visited gunpowder mill sites in Scotland. We started on the evening of Good Friday with a joint meeting with members of the Gorebridge and Roslin local history societies. This had been arranged by our member Alasdair Anderson, who is researching the history of the gunpowder works at Stobbs Mill on the Gorebridge Water. This is 16 km SE of Edinburgh. Unfortunately Alasdair was ill and unable to attend but his colleague Iain Matheson read the paper he had prepared on Stobbs Mill. This



was the earliest known gunpowder mill in Scotland, having been established in 1794 by three men from Surrey. One of these was John Merricks who had experience as a powder maker and it seems likely that he had worked previously at the Tolworth mill. Gorebridge had 10 waterwheels, employed up to 60 men and produced Government powder. Merricks left in about 1805 to about 1805 to set up the Roslin mill with John Hay but work continued at Gorebridge. It was operated from 1831 until it closed in 1864 by John Caldwells. Alasdair has recently located a descendant of Caldwells and anticipates acquiring additional information from this source. After this talk Alan Crocker outlined the history of the 11 known gunpowder mills in Scotland and showed slides of those to be visited during the tour.

On the Saturday morning we visited the Stobbs Mill site by kind permission of the owner Mrs Ross, who had attended the talks on the previous evening. Unfortunately little remains on the site apart from Stobbs Mill House, some ruined vaulted chambers, foundations, and puzzling weirs and watercourses. A map of 1856 shows the mill buildings and Alasdair Anderson has located the remains of many of these. However the map does not give their functions and as so often happens we had to use our imaginations to interpret what we found. We then drove in our three cars to the Roslin mill which was worked from about 1805 to 1954 and is 8 km E of Gorebridge. Apart from Ardeer this was the last gunpowder mill in Britain to close. We were met by Marion Richardson, the Roslin local studies librarian and George Campbell, Chairman of the Roslin Heritage Society. They had brought along copies of an excellent collection of photographs, plans and documents for us to inspect before they showed us around the site. During the 1970s Midlothian District Council started to create a Countryside Park in the steep sided valley of the North Esk which contained the works. They landscaped, stabilised and 'improved' some of the features but funds ran out and the site is now neglected again. The remains include the massive stone-built, water-powered incorporating mills, a small but beautifully constructed barrel vaulted magazine, remains of the tramroad and a fascinating overhanging rock with the date '1815' cut into its face. Some members will remember that we showed the 1954 film 'Goodbye to Roslin' at a Group meeting at Gunnersbury Park in 1986. After a pub lunch and a visit to the 15th century Rosslyn Chapel, with its incredibly ornate stone carvings, we drove west-north-west to the late 18th century planned town of Inverary on Loch Fyne where we spent the night.

Sunday was a cold day with heavy showers of rain and hail but we wrapped up well and set off for Furnace, 11 km SW of Inveraray. We first examined the substantial remains of the charcoal-fired iron furnace after which the village is named. It has the date 1755 on a lintel above the bellows opening. We then went to explore the remains of the gunpowder mill on the hillside above nearby Inverlacken, which was powered by water taken by a lade from the Leacann Water. It was active from 1841 to 1887 and there are striking remains of many of the buildings. We had originally intended to carry out a detailed survey of the terrace of six incorporating mills, powered by a shaft in a tunnel beneath the chambers. However this had already been done by the Royal Commission on the Ancient and Historical Monuments of Scotland and they had provided us with sketch plans and notes. The mills are very similar to those at Tyddyn Gwladys near Dolgellau (see GMSG Newsletter 4) but it was concluded that those at Furnace must have been powered by a water turbine rather than a waterwheel. They are not shown on an 1870 map but are present on a plan accompanying the inspector's official report of an 1883 explosion. This was in the stove

which is now represented by a depression and mounds of debris. We had lunch and dried out in a pub at Lochgilphead and then looked at some of the locks and an interesting traversing bridge on the Crinan Canal, which first opened in 1801.

About mid-afternoon we arrived at the gunpowder site at Melfort, 16 km S of Oban. The forests here were purchased in 1838 by Harrison Ainslie & Co, the Cumbrian iron makers who operated the furnace at Bonawe, 16 km E of Oban, and who needed a new source of charcoal. Gunpowder making started in 1853 and continued until 1874. The cottages and the service and administration buildings, built of stone on the flat land near the head of Loch Melfort, have been converted into time-share accommodation and the cooperage and saltpetre buildings have become offices and leisure facilities. The manufacturing buildings were behind these along the steep-sided valley of the River Oude. They are very decayed but most can be identified from an 1871 map, where they are labelled. These buildings are not located in a logical sequence for the manufacturing processes. This is probably because several were built after a serious explosion in 1867 and spread farther up the valley to increase the distances between danger buildings. The site was of course water-powered and there is a beautifully constructed lade along the side of the valley. A tramway served the upper part of the site and another linked the 'time-share' area to a jetty on the loch. On the way back to Inveraray we had a cup of tea at McTavish's Kitchen in Oban and photographed the Connel Ferry bridge and those in the car driven by Tony Yoward (a former rally driver) managed to get a glimpse of Bonawe.

We drove through two or three inches of snow on Monday morning in going south to Kames, 2 km S of Tighnabruaich on the Kyles of Bute. We explored the 'Black Quay', which was used by The Kames Gunpowder Co, and the nearby saltpetre works and then drove 2 km inland to the associated manufacturing buildings at Millhouse. The site was operated from 1839 to 1921, initially by a local company but from 1876 by Curtis's & Harvey. We concentrated on the earlier buildings on the south side of the road and again benefitted from a recent RCAHMS survey of the works. The Craignafeich Burn meanders through the site and a complex arrangement of lades provided water-power. The buildings are clustered close together and many are linked by a branching tramway system. Most impressive were the stone incorporating mills, some of which retain a massive, high-level, transverse timber beam. We also noted, in the village street, the workers cottages, offices and the works bell, mounted at the top of a timber post, but unfortunately we missed the canon used for testing powder which is still in position on its range. The site is now owned by the Forestry Commission but is clearly not of commercial interest to them and a local resident who came to talk to us was concerned that the site might be sold to an unsympathetic developer.

After thawing out over lunch at the pub in Tignabruaich we drove to the Glen Lean site at the village of Clachaig, 5 km WNW of Sandbank near Dunoon. This was the earliest West of Scotland mill, being established in 1832. It was acquired from a local company by Curtis's & Harvey in 1844 and operated until 1878, reopening in 1891 for the production of Amberite, a smokeless powder similar to Schulze powder, before finally closing in 1903. We parked near the former manager's house which has a moulding over the door in the form of a shield dated 1863 with two barrels below. The mills are stretched out along the banks of the Little Eachaig on the opposite side of the road. Many of them were powered by water which was channelled through the site in a very large lade. The massive stone buildings are



closely packed together and apart from being roofless are in reasonably good condition. The incorporating mills are perched above the river so that exploration involves quite a lot of clambering. There were also buildings on the opposite bank but we decided not to risk balancing across the remains of the bridge. It was interesting to see what appeared to be the circular remains of a horse gin and also the 1861 tombstone of Dash, Curtis's favourite dog. On returning to the cars we met Peter Brice who lives in the manager's house and he kindly lent us some notes on the site prepared by a local teacher as the basis for school projects. These include extracts from a Deed of Copartnership of 1841 and seven other deeds dating between 1841 and 1875, Land Valuation Rolls from between 1859 and 1896, transcripts of Census Returns for 1851, 1871 and 1881, and copies of official reports of explosions at Kames in 1891 and 1895.

We spent the night at Dunoon and caught a ferry to Gourrock on Tuesday morning. It was pouring with rain as we took the coast road southwards stopping to look at the harbour at Ardrossan before arriving at the Ardeer site of Nobel's Explosives Co Ltd, a part of ICI Explosives, at Stevenston. After going through the formalities of gaining entry to the site we were entertained to an excellent lunch (or rather feast) in the private dining room with our three Ardeer hosts. They had not visited the gunpowder area, which is in a remote part of the site, for several years and thought that most of the machinery had been stripped from the mills. However when we reached them by means of a minibus which had been provided we were amazed to discover a range of four complete mills, each with its separate electric motor in the basement. Unfortunately we were not allowed to take cameras into the works so that in retrospect the visit now seems like a dream. Having seen so many ruined gunpowder mills with no machinery except in a few cases relocated stone edge runners, it was staggering to see the real thing for the first time in Britain. The mills had worked from 1935, when the remaining mills in Cumbria and Kent closed, until 1977. Indeed it may be that the iron edge runners had been used previously at Bassingill, Gatebeck, New Sedgwick or Faversham. After they ceased work the Indian Government is said to have shown some interest in purchasing them but the transport costs were prohibitive so they remain at Ardeer. By this time the torrential rain had caused the minibus to get stuck in the mud of the disused track to the mills but Chris Snape gave it a push and we were soon able to drive on to the fuse spinning plant. This had closed down shortly before Christmas and was due to be stripped of its equipment in a few weeks. We saw the tramway which brought the gunpowder to the building, a tram which was taken upstairs by means of a lift to the man-powered track which ran along the length of the building, serving a long series of hoppers above the spinning machines. A trickle of gunpowder was fed from each hopper into the core of a length of fuze as the threads of the cord were spun around it. This cord was then passed through baths of protective coating and on to a large drum to dry. There were dozens of sets of equipment of this type but it is difficult to remember the details partly because of the excitement of just having seen the mills and partly because of the after-effects of lunch, or rather the accompanying drinks. However Bryan Earle has a 67 page chapter on fuze making in his book on Cornish Explosives. Fortunately we were able to rescue a large collection of documentary information, including photographs and canister labels, from some offices. This material would have been destroyed within weeks but Miles Oglethorpe now plans to find a home for it at the Royal Commission in Edinburgh. This visit to Ardeer was a fitting climax to our tour and we are

greatly indebted to ICI and our rather bemused hosts for making it such a great success.

On the way back to England, on the Wednesday morning, six of us decided to visit the Second World War gunpowder factory on farmland 5 km N of Wigtown. We soon found and explored a range of incorporating mills similar to those at Ardeer but with no machinery. However after about half an hour a very irate farmer came across the field and ordered us off his property. We retired to have coffee in Newton Stewart and explained what had happened to the very friendly man who served us. 'Och', he said, 'that would be Wee Willie. You should've asked Big Fred'. So, we know what to do next time!

In conclusion I feel that we all had a very rewarding and enjoyable time. We learned a great deal and made contact with several local people who are now likely to research their sites with renewed enthusiasm. Apart from the people mentioned above, several others helped to make the tour a success. In particular thanks are due to Elizabeth Tough for making the contact at Ardeer, to Ken McConnell who provided us with information about Kames and of course to Edward Patterson and John Robertson, the two main authorities on Scottish gunpowder mills, who have provided us with much of the information upon which our knowledge of these mills is based.

#### **A literary postscript, by Brenda and Angus Buchanan**

After a busy and rewarding tour of gunpowder sites in Scotland, for the organisation of which we are very grateful to Alan and Glenys Crocker, we stayed on in Galloway for another night to see some of the more general features of interest there. These cover a large chronological span, so that we marvelled at the cryptic cup and ring markings on stones at Balcraig, and the great circle of granite boulders at the Stones of Torhouse; paid tribute to the influences of religion at the Cistercian monastery of Glenluce Abbey, and the monuments to the Martyrs of Wigtown; admired the engineering of the turnpike and military roads, and the harbour works of John Smeaton and later John Rennie at Portpatrick; and sampled (and bought) the products of the smokehouse at Colfin, and the distillery at Bladnoch, the most southerly producer of fine malt whisky. For light reading we had John Buchan's *The Thirty Nine Steps* (1915), chosen for its local interest, since in fleeing from his enemies Richard Hannay travelled by train to Galloway, the traditional home of Clan Hannay, and then took refuge on the bulky mass of the Cairnsmoor of Fleet. Most of his subsequent adventures took place on this mountain, which looked formidably snow-capped and unwelcoming during our short stay in the region.

We did not expect *The Thirty Nine Steps* to bring us back to our subject of explosives. but it did just that, because when held prisoner in a remote lodge on the mountain, Hannay regained his freedom by blasting his way out of captivity. John Buchan requires his readers to suspend credulity at many points in the spy story, most of all when our imprisoned hero finds first a torch in his darkened room, then '... coils of fine copper wire and hanks and hanks of a thin oiled silk ... a box of detonators, and a lot of cord for fuses', and finally a wooden case containing 'half a dozen little grey bricks. each a couple of inches square'. Hannay describes what happens next:

'I took one up, and found it crumbled easily in my hand. Then I smelt it and put my tongue to it. After that I sat down to think. I hadn't been a mining engineer for nothing, and I knew lentonite when I saw it....But

the trouble was that my knowledge wasn't exact. I had forgotten the proper charge and the right way of preparing it, and I wasn't sure about the timing...but it was the only possible chance.

I got a detonator and fixed it to a couple of feet of fuse. Then I took a quarter of a lentonite brick, and buried it near the door below one of the sacks in a crack of the floor, fixing the detonator in it....I ensconced myself just below the sill of the window, and lit the fuse... There was dead silence...I wondered where I would be in five seconds.

A great wave of heat seemed to surge upwards from the floor, and hang for a blistering instant in the air. Then the wall opposite me flashed into a golden yellow and dissolved with a rending thunder that hammered my brain into a pulp... I felt myself being choked by thick yellow fumes, and struggled out of the debris to my feet.... I found myself standing in a yard in a dense and acrid fog...and staggered blindly forward away from the house...'

Hannay was able eventually to make his way back to London, to convince the Admiralty of the great danger facing the country, find the 'Thirty Nine Steps', and so prevent the dastardly enemy spies from making off with vital information about the disposition of the ships of the British navy.

The story makes for a good read, a slight but engrossing 'ripping yarn', with enough nuggets of hard fact within it to prompt us to ask more knowledgeable members of our Group about lentonite. Was there a product known by that name and used in mining, or is this a fictitious name? Could Hannay have survived such an explosion at close quarters? And are there any other examples of explosives playing a role in the developing plot of a novel? Perhaps we have here a new source of information on our subject, waiting to be explored.

#### \*\*\*\*\* A POWDER MAKER IN FAVERSHAM IN THE 16th CENTURY \*\*\*\*\*

The case for the early establishment of powder mills at Faversham has been based on the statement by Edward Jacob, in his *History of the Town and Port of Faversham* (1774) that the first powder works in the town were established 'in the reign of Queen Elizabeth, if not before her time'. However no clear confirmation of this had until recently been found.

Arthur Percival, in his account *Faversham's Gunpowder Industry* (Faversham Paper no.4) made a tentative suggestion that there may have been a link between Faversham and the early powder mills at Rotherhithe, which were in operation by 1555 and perhaps by 1536. The Rotherhithe site was owned by Bermondsey Abbey and it was from the Priory, as it then was, that the Royal Abbey of the Holy Saviour was founded at Faversham in 1147. Arthur Percival states that it is 'tempting, but probably unwise in the absence of specific evidence ... to suppose that both in Bermondsey and in Faversham monastic initiative lay behind the introduction of the gunpowder industry.'

The first known definite date for the Faversham industry has been 1653, when Daniel Judd was at the Home Works and had clearly been established there for some time. (Percival, p.3)

Evidence has recently been found, by Mrs Patricia Hyde of Guildford, of a powdermaker in Faversham in 1573. The Muster roll (Kent Archives Office, Maidstone, FA CPM 3 fol.3 rev.) lists, in Preston Street (now appropriately the home of the Fleur de Lis Heritage Centre) Thomas Gyll,

powder maker, and William Byrde, his servant.

Thanks to Mrs Hyde for this important contribution which it is hoped will lead to further interesting discoveries about the early gunpowder industry.

#### GUNPOWDER SUPPLIES TO NORTH EAST ENGLAND

As noted in Newsletter 5, p4, the absence of powder mills in the North East has raised the question of the source and transport of powder for the mines of that area. This has been taken up by Tom Hay of Darlington who has raised it with the Cleveland Industrial Archaeology Society, and their Newsletter 49 (March 1990) contains some interesting responses.

Richard Pepper has obtained some information relating to the period before the First World War from an ex-Cleveland ironstone miner. Coasters carrying black powder (actually more of a brown colour) came into the Powder Jetty, which was just upstream of Paddy's Hole [this appears to be the location referred to by another correspondent as 'Powder Hole' at South Gare, the southern breakwater at the mouth of the Tees]. It is believed that the powder came from Belgium and not from a source in Great Britain.

The powder boxes were unloaded by a hand crane housed in a transit shed and transferred to a railway powdervan. This arrived in the shed by being backed down an incline on the end of a 100-yard long rope attached to a Warrenby Ironworks locomotive. The loco was not allowed on to the jetty because of danger from sparks. When the van was full it was hauled by the rope up to a siding and the operation was repeated with several more vans. Then the loco, separated from the powdervans by bogie wagons, moved the train to Tod Point sidings to await a North Eastern locomotive for dispatch to the mines. In the case of Eston mines the powdervans were run into a tip yard and the boxes were then transferred to a horse-drawn cart which delivered them to the various powderhouses associated with the mines. The coastal traffic stopped in the First World War and powder (shiny black in colour) was then obtained from W H Wakefield & Company.

The CIAS Newsletter also contains a note by John Owen who states that until recent years there was an explosives store near Pinchinthorpe railway station, which was associated with ICI. Also Mr Owen was given information by the late Mr Andrew Turnbull, manager of Kilton ironstone mine in its final years, who said that a lot of black powder came from Wakefield's Gatebeck works. Indeed a powder box from Gatebeck was found in 1988 behind wallpaper in a cottage in the California district of Eston. The box, which is displayed in an ironstone mining exhibition at Kirkleatham Old Hall Museum, has the following lettering stencilled on the lid:

8 to 1b Compressed Gunpowder Blasting Cartridges  
Ammunition Div 2 Explosive  
W.H. Wakefield & Co. Gatebeck Near Kendal

One of the attendants at the museum has told Tom Hay that powder for Eston Mines came in these boxes, of which several were packed in chests or trunks, in the guard's vans of trains to South Bank station, from which they were taken to the powder magazine at the mine. The railway line east from Middlesbrough to South Bank and Redcar opened in 1846, shortly before the mines started in 1851.

Another correspondent refers to an account by Huby, who was brought up in the 1890s at Nunthorpe Station, where his father was Station Master. He

himself became Station Master there later. Explosives were brought to the station by train and transferred to a hut, which was south of Marton Moor Farm, near the Ayton and Stokesley Road. It has long since disappeared and been built over. Referring to the 1890s, Huby wrote:

'Occasionally wagons of gunpowder arrived for storage in a local powder magazine pending transfer to the mines for use in blasting. This traffic was conveyed in specially fitted iron vans, with nail-less or non-iron nailed boots provided for persons handling the traffic. These consignments were handled with great care ... smoking being prohibited and sparks from passing engines avoided. The agreed value of the boots was debited against the receiving station by a "paid on" and "to pay" invoice in accordance with the usual practice of the period, under which wagon ropes, packing, grain sacks, tilts and other equipment was charged to the receiving station to ensure that no loss or damage occurred.'

#### GUNPOWDER MILL IN THE PELOPONESE

It was mentioned in Newsletter 6 that the Group had received an enquiry from the Cultural Foundation of the Hellenic Bank of Industrial Development (ETBA) in Athens, which has a project in Dimitsana. They have since joined the Group and will be sending us an account of the project in due course. Meanwhile Dr Papadopoulos has sent copies of their journal *Teknologia* for 1988 and 1989. These contain short summaries in English. That in the 1988 issue explains that the Outdoor Museum of Water Power at Ai-Yannis Dimitsana aims at salvaging representative monuments of modern Greek history (powder mills of 1821 and technology (water power) by reconstructing the buildings and equipment of a watermill which also houses a *nerotrivi* (felting installation) and an old-style powder mill. Within this context they are organising exhibits on water power in general. In 1988 they carried out preparatory work on the site. The 1989 issue reports on a research project to locate water-powered installations in Dimitsana, in order to compile a report with a view to setting up an Open Air Museum of Water Power. The architect St. Nomikos and the social anthropologist Ms A. Oikonomou describe their field work, recording and collecting of oral testimonies. They traced the existence of some 60 buildings, housing 91 water-powered installations. There is an account of the meeting at which the inhabitants at Dimitsana were told about the project. The article is illustrated by a drawing of a set of stamp mills.

Any members able to read modern Greek are welcome to borrow the journals - please send A4 s.a.e. (56p postage) to Glenys Crocker.

#### EXPORT OF SULPHUR FROM ICELAND - A QUERY

Paul Sowan of Subterranea Britannica would be interested to know of any mention of the export of sulphur from Iceland. The Icelandic 'sulphur mines' were all open surface pits, at places such as Krysvik, Reykjahlid, and the Krafla area (exported via Husavik). The U.S. State Department's *Report on the resources of Iceland and Greenland* (1868) says that 'up to a few years ago the sulphur had only been explored in the rudest way by the natives ... the Icelandic sulphur is excessively cheap, about half the price ... of Sicilian sulphur ...'

Any information please to Paul Sowan, c/o Croydon Natural History & Scientific Society, 96a Brighton Road, South Croydon, Surrey CR2 6AD

#### A NOTE ON MAKING GUNPOWDER IN MADRAS IN 1803

There is a short note in the *Journal of the Royal Institution* for 26 September 1803 by a Mr B Roebuck of Madras, who was presumably trying to make gunpowder from local materials. He records that washing the nitre makes it less useful for gunpowder manufacture (no recrystallisation?) but that the addition of 1 oz of strong nitric acid to 10lb of nitre gives a much stronger powder. He used charcoal from *Dolichos saja* with ratios of nitre : charcoal : sulphur of 45:8:7, and from *Euphorbia tirucallis* when ratios of 45:10:7 were used. He records that these gave powders of equivalent strength and better than that in current use by the Royal Navy.

David Hansell

#### HOUNSLOW POWDER MILLS - A NEW REFERENCE

Jonathon Fogg was producing powder at Hounslow Mills from at least August 1714 until his death in October 1723 and for some years afterwards his widow Catherine continued the business. (P.R.O., WO 47/27 fo.21, WO 47/31-32, WO 48/63-68). During the period 1725-27 the only two suppliers of new powder to the Ordnance were widows - Phillipa Walton and Catherine Fogg.

Keith Fairclough

#### 'FIREWORKS'

This is the title of an attractive periodical for 'pyrotechnophiles', which should be of interest to members of GMSG. It appears twice yearly and I have just come across issue 17, published in March 1990. This is of A4 format with 32 pages packed with articles, letters, photographs, cartoons, drawings and advertisements. Some of these are concerned with the history of fireworks but much of the material is about their manufacture and use, together with reports of significant displays. It can be obtained from the Editor, J F Bennett, 68 Ridgewood Gardens, Bexhill on Sea, East Sussex TN40 1TS. The annual UK subscription is £7.00

The history of one firm of fireworks manufacturers, James Pain & Sons of Mitcham is recorded by Eric Montague in *Surrey History* 4[1], pp34-38, 1989. The story covers the period 1872 to 1965 and is illustrated with 10 historic prints and photographs. (This particular issue of *Surrey History*, which is A5 with 64 pages, also contains articles by Glenys on the Godalming Framework Knitting Industry and myself on the Paper Mills of Surrey. I can supply copies for £2.95 plus 30p for post and packing).

Finally several books deal with the subject of fireworks. We have two interesting ones which nicely complement each other. Of historic interest is Alan St H Brock's *Pyrotechnica, the History and Art of Firework Making*, O'Connor, London, 1922. More popular is the American George Plimpton's *Fireworks, a History and Celebration*, Doubleday, New York, 1984, which was remaindered in 1988.

Alan Crocker

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