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Southampton University Industrial Archaeology Group

Journal



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Cover photo: King Alfred looks on as one of his buses waits between journeys in Winchester Broadway in the late 1960s

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The Contributors

Keith Andrews
Keith Andrews is a computer programmer now living in Winchester, who had never even visited the city until after King Alfred Motor Services ended. His youthful interest in buses in London was rekindled by glimpses of old green buses in Winchester on the early running days. He is a member of FoKAB and Membership Secretary of SUIAG.

James Freeman
James Freeman's connection with, and love for, Winchester grew from many visits to his great aunts, who lived in Stockbridge Road. Their front window afforded a splendid view of King Alfred buses as they passed by. His interest in King Alfred eventually led him to a first career in the bus industry, following a degree course in history at the University of Southampton. He is Chairman of Friends of King Alfred Buses.

Jon Sims
As a boy, Jon Sims lived just down the road from the Cromford & High Peak Railway without realising it. His interest in I.A. started with steam pumping stations which he visited with his father, a waterworks engineer. He writes regularly for *Waterways World* on photography, industrial archaeology and waterways in general. He is a member of the IWA, the Railway & Canal Historical Society, several canal societies and is currently Chairman of SUIAG.

Dr Rodney Hall
Rodney Hall has spent much of his life at Bletchley, within a mile of the railway junction and wartime 'Enigma' code cracking centre and now part of Milton Keynes. On leaving school, he undertook an apprenticeship in mechanical engineering in Northampton. In the mid 1970s a career move resulted in going to South Lancashire. Deciding a few years later to change direction, he gained degrees at Loughborough University and a Postgraduate Diploma in Industrial Archaeology at the Ironbridge Institute. In the mid 1980s he started research at Portsmouth Polytechnic, as it then was, and is currently involved with post-doctoral research into metal fatigue at the University of Portsmouth.

Roger Hedge
After attending Dulwich College, Roger Hedge graduated in Chemical Engineering at Imperial College, University of London. His professional career has been in Chemical Engineering but this has been accompanied by many other interests. He has taken part in athletics, has been a leading county bridge player and delights in music. His contribution to the *Journal* reflects his interest in geology and industrial archaeology.

Clare Church
After many years as a school secretary, Clare Church decided to follow in the steps of her children and to obtain a university degree. She studied at Bournemouth from 1991 to 1994, and graduated in tourism. Subsequently she has developed an interest in archaeology and is working for the University of Southampton Certificate in Regional and Local Studies.

Philip Armitage
The writer, now retired, was a documentary film director and later a producer of informational publicity for industry and the Civil Service. Born and educated in New Zealand, he married and settled in the UK after military service with the New Zealand forces in Africa and Europe.

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Southampton University Industrial Archaeology Group Journal

Editorial and Acknowledgements

Welcome to the 1997 edition of the SUIAG *Journal*, the sixth to be published. As usual, the contributions cover a wide range. For instance, the New Forest is not usually regarded as a location for industry, but explosives were produced on a site within the Forest until after the First World War. Doubtlessly some of the products were used for defence, but sporting activities absorbed much of the output. An essential raw material for paper making was water and it is not surprising that a number of paper mills were established in Hampshire. The name that springs to mind is Portals but, as described in this issue, an important mill operated for many years at Alton. Lime burning was widespread in Hampshire, the product being used mainly for agricultural manure and the making of plaster. However, somewhat oddly, the only surviving kilns in the county are an impressive range of five, that produced lime for softening water at Twyford Waterworks. Many of the mid to late Victorian buildings are roofed with slate from North Wales and some may well have come from the great quarry at Cwmorthin, visited by one of our contributors. Transport is the subject of two articles. One is concerned with a short branch line which carried bricks and coal between a railway and a brick works in Wiltshire. The other is devoted to passenger transport as developed by the well remembered King Alfred Motor Services of Winchester.

It is not too soon to submit articles for inclusion in the 1998 edition of the *Journal* – in fact, some are already in hand. Alternatively you might consider writing a shorter piece for publication in *'Focus'* or, something longer to appear as a monograph. Anything concerned with the industrial archaeology or economic history of Hampshire will be welcome, while members of SUIAG may submit pieces based on other places. If you have not already joined SUIAG, details are given on the back page.

Once again we are particularly grateful to Angela Smith for the design and setting of the 1997 *Journal*, and to all our contributors. Acknowledgements and thanks for the provision of illustrations are made as follows:– *Adit Publications*, Mold (Figs 17 - 20); Keith Andrews (Figs 6, 9); Philip Armitage (Fig 31); C L Caddy (Fig 3); Dr June Chatfield (Fig 35); Clare Church (Figs 22, 23, 25 - 28); Curtis Museum (Fig 34); *Friends of King Alfred Buses* (Fig 2); Rodney Hall (Fig 13); Hampshire County Council Museums Service (Figs 30, 33); Alan A Jackson (Fig 16); M Lovelock (Figs 4, 5, 7, 8, 10); Ordnance Survey (Figs 12, 24); P J Relf (Fig 1); K Shackleton collection (cover); Jon Sims (Fig 11); Angela Smith (Fig 21); Spicer Ltd (Fig 32); Twyford Waterworks Trust (Figs 14, 15).

Edwin Course
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Editor: Dr Edwin Course

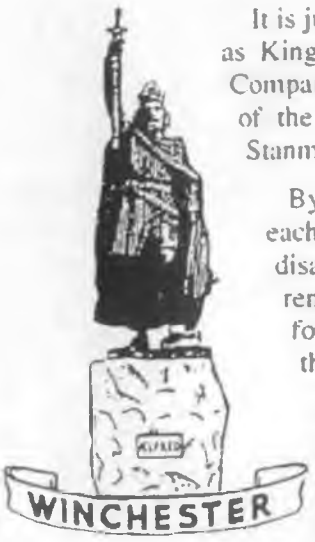
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Keeping King Alfred on the road



It is just about 25 years since the buses, routes, and staff of R Chisnell & Sons Ltd, trading as King Alfred Motor Services, were sold at nominal value to the local National Bus Company subsidiary, Hants & Dorset. 28 April 1973 marked the end of more than fifty years of the provision of public transport by this family business: the first bus service, to Stanmore, had started in 1922.

By 1973, the travelling public had come to take for granted the green and cream buses, each resplendent with a statue of King Alfred on its sides, but within 18 months it had all disappeared: the buses had either been repainted red or sold, the routes had been renumbered and reworked, and many of the staff had left. One might have been forgiven for thinking that, consequently, King Alfred Motor Services would become no more than a pleasant memory. The reality was quite a lot different.

Today, 25 years on, a thriving group exists devoted to interest in the old King Alfred firm. The *Friends of King Alfred Buses* has about 150 members, has collected a fleet of some 16 vehicles, and organises many events that keep King Alfred "on the road". Their efforts reach a climax every year on New Year's Day when, in the absence of "real" buses, the old King Alfred buses come out and run services to the original timetables along their old routes, to the entertainment and delight to many hundreds, even thousands, of people.

Why so much interest?

The answer lies in the nature of King Alfred Motor Services. It was one of the few privately-owned bus companies to run a municipal service. Its fleet of 30–40 vehicles at any one time always included the latest types, and the firm was every bit as professional as the "big" bus companies that surrounded it. Yet, all the time, King Alfred buses were proudly independent, with the statue of King Alfred on their green side panels to add that ultimate distinction.

King Alfred Motor Services was founded by Robert Chisnell senior, who had many business interests in Winchester, including tobacconist shops, "Sausage Potato & Onion" restaurants and, later, a garage business. His first involvement with passenger transport was in 1915, using a variety of small motor vehicles to transport troops to and from various camps in the area (because his horses had been requisitioned for war work!).

The first charabanc excursion was to Bournemouth on Whit Monday, 24 May 1920, using a vehicle based on an ex-R.A.F. Leyland Chassis. In spite of the unreliability of the early vehicles, the business flourished and the first regular bus services began on 9 October 1922, to the new Council estate at Stanmore via two circular routes, together with another circular serving Compton, Shawford and Twyford, and a route to Flowerdown.

From these small beginnings, an extensive network was built up eventually serving most districts of the City and radiating as far afield as Fisher's Pond, Owslebury, East Stratton, Basingstoke, Stockbridge and Broughton. Thus the green and cream buses with the King Alfred's statue emblem on the side became a familiar sight throughout the area.

However, in the early days there was competition from various other operators on some routes, especially those towards Stockbridge. Even after the Road Traffic Act 1930 introduced service licensing, this road was also covered by another operator which changed names and



Figure 1: A Leyland Titan lowbridge double-decker, with rather battered body-work, passes Winchester Station. This is the bus that FoKAB repatriated from Augusta, Georgia, USA, and is currently restoring

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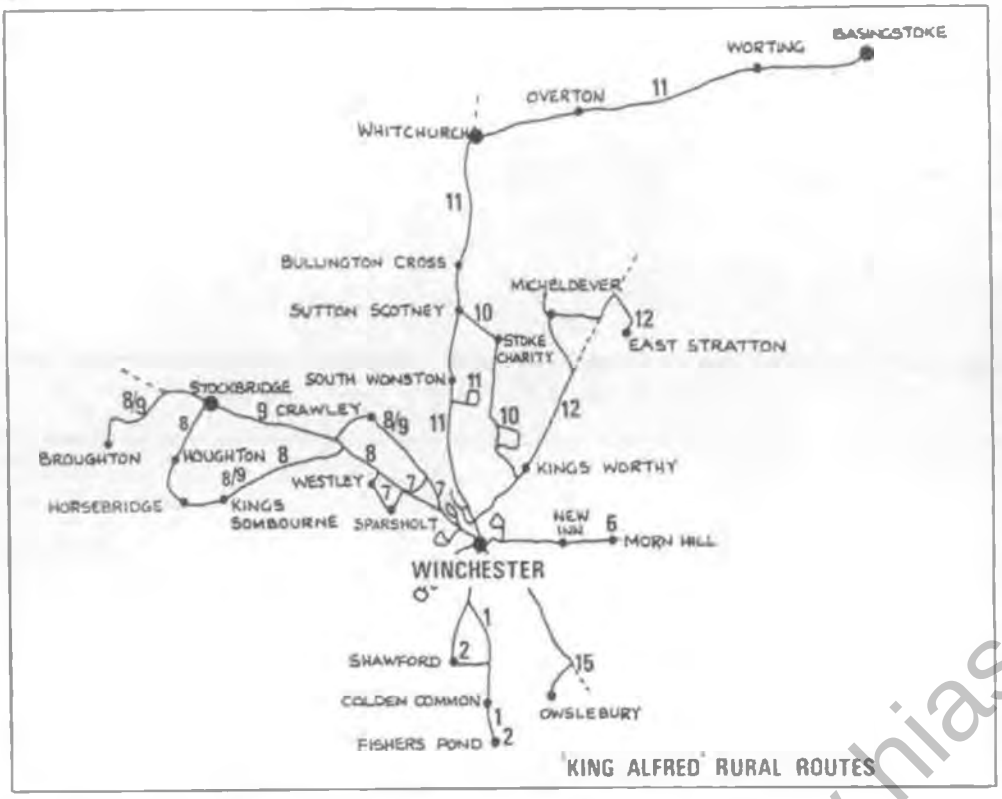


Figure 2: *'King Alfred'* rural routes

owners several times – successively Empress Coaches, Hants & Sussex, Holland's Tours of Birmingham and, finally, Budden's. King Alfred eventually had the route to itself when Budden's gave up in 1961.

The 1930s were years of consolidation resulting from the stability given by the Road Traffic Act. The first generation of vehicles gave way to a fleet of fine modern buses and coaches (no double-deckers were owned until 1942). The coaches were used for excursions and private hires and also, from 1928 until 1932, on the London service, which operated via Basingstoke and offered several hours in central London.

By the time the Second World War broke out in September 1939, R. Chisnell & Sons Ltd. (as the company had become) was acknowledged as the local operator for Winchester, and with an enviable reputation. The War, however, brought many difficulties: shortages, of fuel, rubber, buses and staff. There were also lots of new passengers – servicemen based at the many camps, evacuated people and war-workers. As a result, several Ministry of Supply specification buses were bought – these were to "utility" design and featured amongst other things wooden seats (later replaced). The War also saw the employment of a whole troop of girls to work as conductors – some of these stayed with the firm for many years!

Robert Chisnell senior died on 5 June 1945, after which his two sons continued to run the Company. They were known to one and all as "Mr Bob" and "Mr Fred".

The early post-war years were a busy time for all bus operators. This was an era when fuel was severely rationed, power was often cut and there was as yet no TV. Sometimes, a bus was the only warm, bright place to be. Bus travel grew, and so did the King Alfred fleet. The first of 16 Leyland Titan double-deckers arrived in 1946, permitting increased services. From 1945 the buses carried route numbers from 1 to 11. And as Winchester grew through



Figure 3: Two Leyland Titan highbridge double-deckers wait outside the St John's Rooms in Winchester Broadway, next to the King Alfred inquiry office and snack bar. FoKAB now use this as their inquiry office on running days

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the 1950s, the King Alfred route network grew with it – moving for example into Wavell Way and Minden Way in 1949 and Weeke Estate in 1953. In addition a number of the remaining local operators were taken over, including Greyfriars (who ran to Owslebury and Highcliffe) and Oscar Callaway (who ran from East Stratton).

But the 1950s saw the start of increased motoring. Winchester's notoriously narrow streets were soon choked with traffic. Often, it would be nothing for it to take twenty minutes to travel from the Broadway to City Road, while the queue for the traffic lights at Southgate Street often started at Ghosts Corner. In such circumstances, the provision of a regular timetable became a nightmare and staff found conditions strenuous and unattractive.



Figure 4: FoKAB's Leyland Tiger Cub in the process of being repanelled during 1990

Increasing car traffic thus meant fewer passengers as well as staff shortages. From 1963 the route mileage began to be cut back, particularly in the evenings and on Sundays. Mr Bob in particular waged a one-man war against traffic measures such as the Central Car Park which he said would further reduce the attractions of bus services.

Despite the frustrations caused by these problems, the Chisnells continued their policy of buying high quality modern vehicles for the fleet. Thus high-capacity low-height double-deckers, initially AEC Bridgemasters, then Renowns and later Leyland Atlanteans joined the fleet, whilst new single-deckers introduced, for example, the 36-footer to Winchester streets in 1962. This policy continued right through to 1971, when King Alfred became the first independent operator to buy a fleet of the revolutionary Metro-Scania single-deckers.

Nonetheless, the particular prosperity of Winchester (having in the 1960s the lowest unemployment rate in Great Britain) meant that obtaining and keeping staff became more and more difficult. Who would want to work unsocial hours in difficult driving conditions for busman's pay in Winchester when highly-paid jobs were available, for example, at Ford's factory in Swaythling? Staff shortages affected all departments, especially engineering and, although valiant attempts were made to keep the service on the road, it was something which clearly could not go on for ever.

Mr Bob and Mr Fred had, by the start of the 1970s, reached the age when they looked towards retirement. So they started to seek ways in which the business could be sold on. They tried hard to sell *King Alfred* to the City Council (which proved impossible because of Government policy) and then to other private parties. But in the end, events overtook them and, with the threat of a Traffic Commissioner's enquiry hanging over them, the Chisnells decided to place their licences in the hands of the Commissioners. The routes and buses then passed to the National Bus Company, in the guise of Hants & Dorset, who maintained a depot in the city for routes to Southampton, Andover, Fareham and Salisbury.



28 April 1973 was a sad day for the Chisnells and for all King Alfred staff as well as the travelling public of Winchester and its surroundings. All too soon the familiar green buses, with their proud emblem of King Alfred on the side, were swept away and NBC poppy red held sway!

Figure 5: The same Leyland Tiger Cub, repanelled and repainted complete with period adverts, at East Stratton in 1992, followed by a Leyland Panther

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Figure 6: The 1988 running day, with the Leyland Panther just bought from Rees & Williams. Behind is the AEC Renown returned from Washington DC, restoration completed only the previous day

For a time, the *King Alfred* became no more than a memory. But in 1981, James Freeman, a great enthusiast for King Alfred, discovered and then bought an ex-King Alfred bus from Eynon's, an operator in Trimsaran, near Llanelli in South Wales [Fig. 4]. It was a Leyland Tiger Cub, built and delivered new to King Alfred Motor Services in 1959. Being in very poor condition, it took many months of energy and a lot of money to get it back to good order and to paint it green and cream again. The bus came back to Winchester in October 1981, appearing unannounced at an enthusiasts' outing in the Broadway – to the delight of one and all.

Another vehicle followed in 1982, this time a Leyland Atlantean, a double-decker [Fig. 7]. By 1984, it was evident that preserving and using these two buses could not be done single-handedly. Moreover, the idea of a "running day", when the buses would run over their old routes, had been started: in March 1983, one bus alone had operated; in March 1984, two buses had run. The popularity of these events along with the need for assistance made it clear that the time had come to form a group. Thus was the *Friends of King Alfred Buses* (FoKAB) formed, with the inaugural meeting in the King Alfred pub (where else?) in Winchester. Since that time a regular programme of meetings has been organised, while the running days moved to New Year's Day – when no other buses would be on the road.

The fleet started to expand, as more former King Alfred buses were retired from operation in various parts of the country – indeed world. Thus, the fleet was augmented by a 1961 petrol-engined coach in 1986, and by a second Leyland Atlantean the following year, which had been running as an open-topper on the sea front in Weston-super-Mare. Meanwhile, other aspects of the history of King Alfred Motor Services had not been ignored. The history of the company was painstakingly researched and chronicled from 1979 onwards, resulting in the publication in 1984 of *"King Alfred Motor Services: The Story of a Winchester Family Business"*. There have been several exhibitions, covering such aspects as uniform, tickets, and ticket machines.



Figure 7: The first Leyland Atlantean turns at Oliver's Battery on the 1988 running day

In 1988, James Freeman came across a King Alfred bus in Washington DC, USA (and, later on, another, amazingly, in Augusta, Georgia – but that's a whole story in itself). This was a 1964 AEC Renown double-decker. It was presented to FoKAB as a gift by its owner: some gift indeed, because it had lain derelict for several years and was in very poor condition – and was in the USA! Nevertheless, FoKAB took on the task of repatriating it and renovating it, so that on New Year's Day 1989 the bus appeared resplendent and ready to go, its paint barely dry! Incredibly, another bus made its debut that day as well: the owner of the 1970 vehicle – a Leyland Panther [Fig. 6] – had answered FoKAB's enquiry about hiring it with *"You can't hire it, but you can buy it if you want!"*. Which is what FoKAB did, subsequently restoring it of course to the final King Alfred livery of bright green and cream.

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An ambition was now growing among FoKAB members to collect every remaining King Alfred bus in the world! So when somebody mentioned that a 1950 Leyland Olympic from King Alfred was lying in a field in Co Carlow, a team went over to Ireland to negotiate its purchase and to return it to Hampshire. The initial trickle of vehicles now seemed to become a flood as several more vehicles arrived. In 1990, another Leyland Panther was followed by a third Leyland Atlantean, again an open-topper. When the condition of the first Atlantean in the fleet became too poor to allow further use, it donated its roof to this open-topper in a complicated transfer, effected by putting the two vehicles alongside each other, and sliding the complete roof, windows and all, from one to the other! [Fig. 8]



Figure 8: The two Leyland Atlanteans side-by-side, being prepared for swapping the roof from one to the other

Yet more arrivals have brought the fleet up to 16 vehicles at the end of 1997. Amongst these are some incredible finds: a 1956 Leyland Titan in the aforementioned Augusta, Georgia, repatriated during 1993; and a 1931 Dennis 30cwt, already in preservation for many years. Most recently, after it was thought that all the remaining vehicles had been accounted for, a visitor to a bus rally said casually *"I have just bought an ex-King Alfred bus"*; so FoKAB soon found itself the owner of a six-wheel Bedford VAL coach which had been cut down for use as a racing car transporter, still with the eau-de-nil King Alfred coach livery showing through the later paintwork and moss and mould. Two "look alike" buses have also been acquired, representing types that have disappeared to the scrapyard.

As the fleet has increased, so have the restoration and engineering skills of the group. In the early days only limited work was attempted, and specialist skills could be used only when funds allowed or if sympathetic bus professionals could be persuaded to donate their services; indeed, two vehicles had to be let go for scrap after stripping spare parts because they were beyond the restoration skills then available. Now, though, tasks such as a virtually complete body rebuild for the Augusta Leyland Titan or major mechanical maintenance are being undertaken. Of course, restoration is not the end of the story: once restored, ongoing maintenance is needed to keep a bus roadworthy. FoKAB's aim has always been to have buses that run and that people can ride on and enjoy seeing running, rather than to keep them as static museum pieces, even though this inevitably increases the repairs and maintenance that have to be done. Despite increased skills and more active members, FoKAB's resources are still stretched to the limit.

With so many vehicles, the issue of secure affordable accommodation local to Winchester is a major concern. FoKAB's policy has been to collect the vehicles first and only then to devote its scarce resources to buildings. Currently, only the 1931 Dennis is stored under cover, but FoKAB is part-funding, along with other owners of preserved buses, the construction of a purpose-built vehicle store near the Mid-Hants railway. This will provide a dry, dark, and secure home for three of the vehicles, avoiding the damage done to paint, rubber, and upholstery by sunlight and rain. Other similar projects will need to follow if the long term future of the buses is to be assured.



Figure 9: On the 1995 running day, the re-roofed Leyland Atlantean connects at Sutton Scotney with the AEC Renown from the USA, its period adverts offering houses in Teg Down for £2250. A Leyland Panther is in the background.

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So what of the future?

Since its formation, FoKAB has increased membership, acquired more vehicles, organised ever-bigger running days, undertaken ever-more ambitious restoration work, and – most importantly – its members have had a lot of fun! There is plenty more to do. 1998 should see the completion of four years of renovation work on the Leyland Titan from Augusta. Two other huge rebuilding projects for derelict vehicles are in the pipeline – they both represent many years' work. The annual New Year's Day operation in Winchester is likely to provide the main ongoing focus and inspiration for FoKAB's continued success. In between are other events where buses are operated or FoKAB is involved. In the immediate future, for example, on 2 May 1998 FoKAB will be marking (celebrating is not quite the right word) the twenty-fifth anniversary of the demise of King Alfred Motor Services with a display of all the vehicles, a new exhibition, and a re-creation of the final night's services – including the actual vehicle that ran the last service journey. Alongside the bus operations, research will continue into all aspects of the history of King Alfred Motor Services, its staff, passengers, routes, and vehicles.

James Freeman and Keith Andrews

List of Buses owned by FoKAB

The list is in order of acquisition.

Reg num	Date	Type (Chassis/Body)	From whom acquired
WCG 104	1959	Leyland Tiger Cub/Weymann single-deck	Eynon's, Trimsaran, South Wales
326 CAA	1961	Bedford SB3/Harrington single-deck coach	Private owner, Totton, Hampshire
HOR 590E	1967	Leyland Atlantean/Roe double-deck open top (on loan to Leisurelink (Wales) Ltd)	Badgerline Ltd
596 LCG	1964	AEC Renown/Park Royal double-deck	Spirit of '76 Tours, Washington DC
UOU 419H	1970	Leyland Panther/Plaxton single-deck	Rees & Williams, Tycroes, S. Wales
JAA 708	1950	Leyland Olympic/MCW single-deck	Glynns, Co Carlow, Eire
UOU 417H	1970	Leyland Panther/Plaxton single-deck	Dealer, ex Morris Brothers, Swansea
HOR 592E	1967	Leyland Atlantean/Roe double-deck	Badgerline Ltd
"HOR 493"		Leyland Titan/Leyland double-deck (this is a "look alike" King Alfred vehicle)	London Bus Export Co, Chepstow
OU 9286	1931	Dennis 30cwt/Short single-deck	Pat Oikle, Merseyside
595 LCG	1964	AEC Renown/Park Royal double-deck	on long term loan from Oxford Bus Museum Trust
POU 494	1956	Leyland Titan/East Lancs lowbridge double-deck (with sunken offside gangway)	Augusta Richmond County Museum, USA
CCG 704C	1965	Bedford VAL/Plaxton single-deck coach	Private owner, Shropshire
YDW 756K	1971	MetroScania single-deck (this is a "look alike" King Alfred vehicle)	Newport Transport

Vehicles acquired but subsequently scrapped:

HOR 591E	1967	Leyland Atlantean/Roe double-deck	Bristol Omnibus Co Ltd
WCG 103	1959	Leyland Tiger Cub/Weymann single-deck	Private owner, ex Cresta Coaches
UOU 418H	1970	Leyland Panther/Plaxton single-deck	Morris Brothers, Swansea

Two other vehicles are owned, a Leyland Titan double-decker and a Leyland Leopard coach. These will provide spares for other vehicles in due course.



Figure 10: The two AEC Renowns and the Leyland Tiger Cub with the lookalike of the Leyland Titan in Figure 3

Further Information

King Alfred Motor Services:
Freeman JDF, Jowitt RE, Murphy RJ:
King Alfred Motor Services: The Story of a Winchester Family Business
1984. Kingfisher Railway Productions.

Friends of King Alfred Buses:
The Secretary, 71 New Road, Fair Oak, Eastleigh, SO50 8EN

King Alfred Buses Yearbook, FoKAB, 1992.
A new handbook to mark the 25th anniversary of the end of King Alfred Motor Services will be published shortly.

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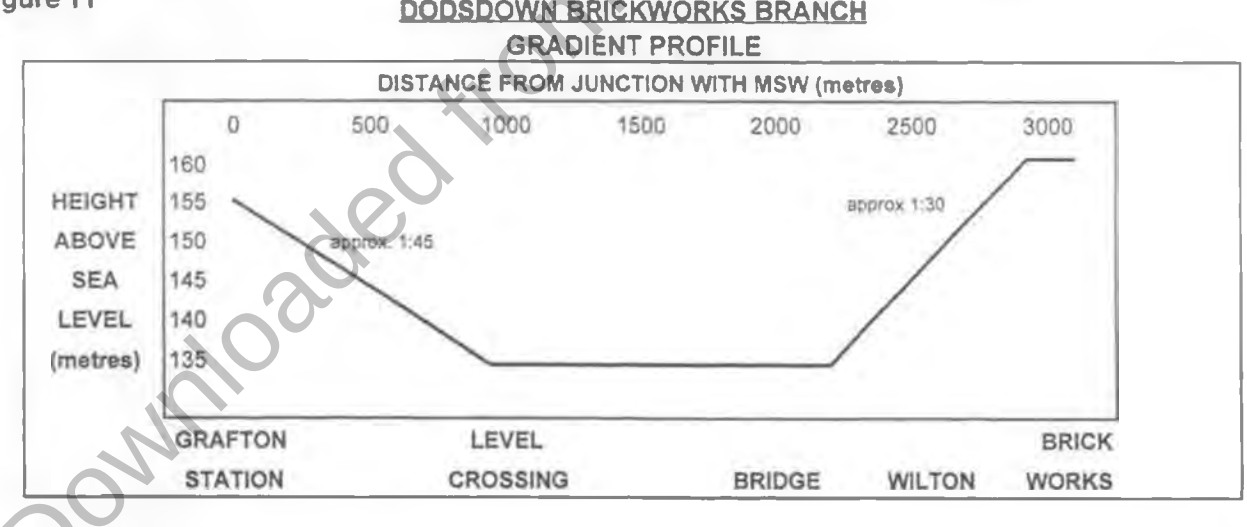
The Midland and South Western Junction Railway: Dodsdown Brickworks Branch

In May of 1997, a party from SUIAG visited the area around Crofton and Wilton in Wiltshire to explore the canal and railways which dominate the locality. While the author made a brave attempt to illustrate the complex chronology of the intersection between the Midland & South Western Junction Railway (MSW) and the Great Western Railway, Berks & Hants Extension (GWR), this is a subject of such complexity as to require a succession of maps and a lengthy explanation. I may attempt this at a later date. Meanwhile, the transport section of Winchester Library has a good selection of books covering the subject. These may be ordered through your local branch of the County Library Service for a modest fee (less than £1). While reading one of these books, I realised that our day out had failed to cover an important aspect of the local transport network. The fault is entirely mine although, in mitigation, I would say that the area contains such a feast of IA that certain crumbs fell, unnoticed, beneath the table. This short piece aims to glean a rather large crumb.

The MSW consisted of various sections of line linking Cheltenham, Cirencester, Swindon, Marlborough and Andover which eventually combined to provide a route from Midland Railway territory to the South Coast through the territory of the GWR. The two lines crossed at Wolfhall Junction, near Crofton, with the Kennet and Avon Canal threading through the complexity of tracks. This part of the route lay over the original line to Marlborough which was under GWR control and was used by the latter to provide resistance to through traffic. The MSW response was to eventually build a new and slightly more direct route to Grafton with a bridge across the GWR to free itself from that company's interference. Thus, for a while, Marlborough was served by two lines from the South, an indication of the level of competition.

The line between Wolfhall Junction and Andover saw varying levels of traffic, reaching peaks during times of war when it provided a vital route to the coast. This was especially important when an arms depot was set up in Savernake Forest. It was the army which also provided local traffic when military depots were set up around the turn of this century on the edge of Salisbury Plain at Bulford, Larkhill and the extensive barracks at Tidworth. The building of these barracks required a large quantity of bricks and the MSW was happy to oblige. (There is an interesting parallel in Hampshire where the Basingstoke Canal provided a similar service in the building of Aldershot Barracks.)

Figure 11



All values are in metres. This may not be politically correct in IA circles but all of the measurements were taken from a 1:10,000 scale map with a 5 metre contour interval and are thus less prone to the errors which can occur when measuring in feet before dividing by 3.2808, 3 and 1,760.

Much of the information for this piece was found in a contribution by D.J.Hyde to the David & Charles book on the MSW. Mr Hyde seems to show some confusion about the profile of the line. He describes the level section beyond the lane crossing thus: "Then came the only level stretch for 1/4 of a mile, and the opportunity to run at a gradient of about 1 in 60, with a slight curve eastwards to avoid a natural lake known as Wilton Wide Water.' He then goes on to quote gradients at either end of 1 in 90 and 1 in 60 which appear to be adrift by a factor of 2, thus belittling the true difficulty of operating the line in slippery conditions.

Lesson 1: Keep your measurements simple. Lesson 2: Never republish figures from books unless you check them.

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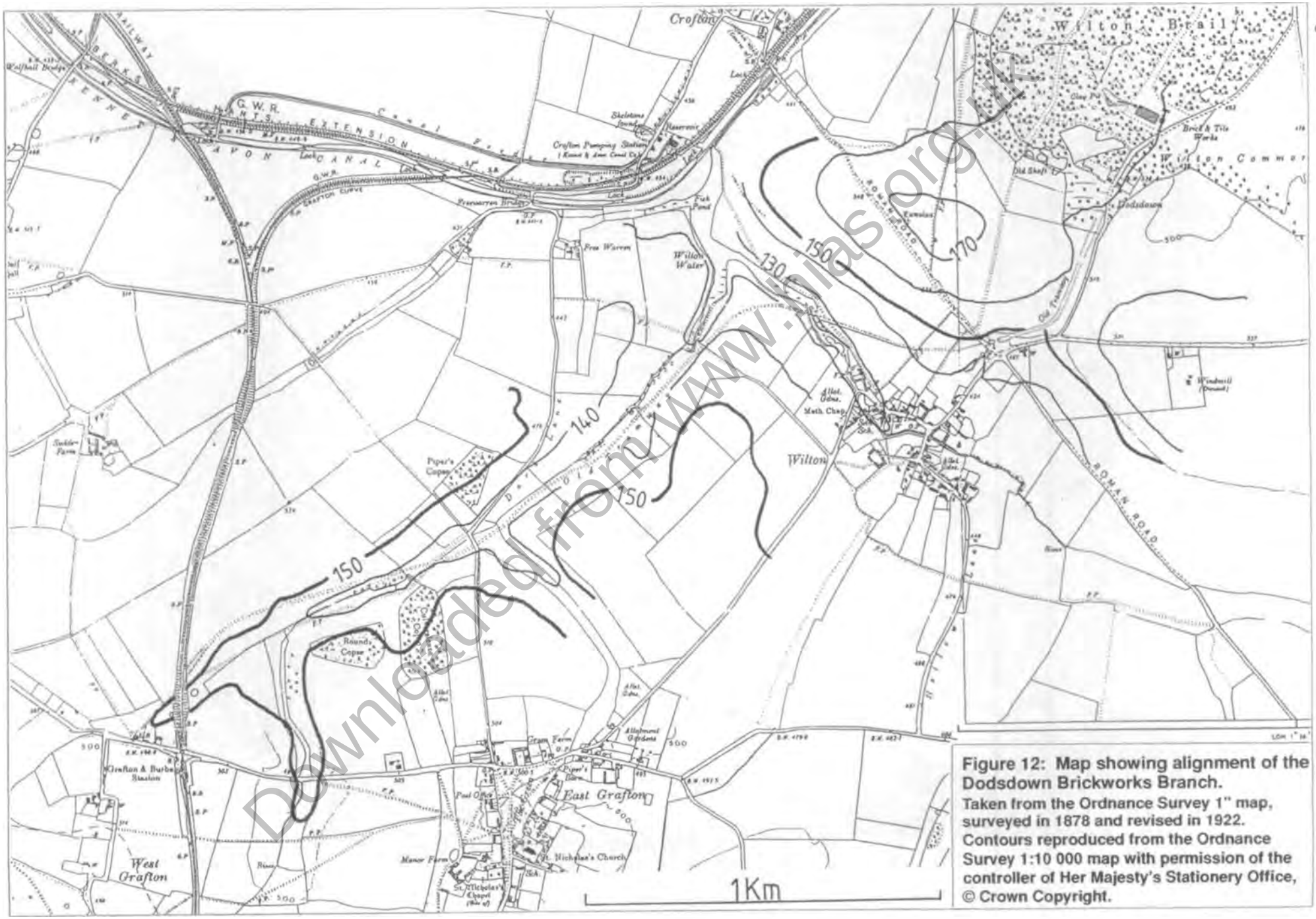


Figure 12: Map showing alignment of the Dodsdown Brickworks Branch.
Taken from the Ordnance Survey 1" map, surveyed in 1878 and revised in 1922. Contours reproduced from the Ordnance Survey 1:10 000 map with permission of the controller of Her Majesty's Stationery Office, © Crown Copyright.

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Wiltshire is not blessed with quantities of brick clay so the discovery of a source at Dodsdown, only eight miles from Tidworth and two miles north east of the MSW's Grafton Station, was ripe for exploitation. The land was leased in 1902 from the Marquess of Ailesbury by A.J. Keeble for £50 a year. This gentleman hailed from the more renowned brick fields of Peterborough. Clay pits were dug and a brick and tile factory, comprising kilns, dryers and a boiler house, was erected on a hill adjacent to Wilton Windmill.

Keeble constructed a two mile standard gauge line from the works to the MSW. The line had a less than level run, dropping from either end to the valley occupied by Wilton Water, the spring-fed lake which supplies the summit of the Kennet & Avon Canal via Crofton pump house. The line descended from the MSW on a gradient of 1 in 45 before running level for around three quarters of a mile. Here it curved across the eastern fork of Wilton Water on a three arch brick bridge which supported the track on timbers measuring one foot square. The remains can still be seen. From here there was a stiff ascent to the brick works with a gradient of around 1 in 30. Those SUIAG members who climbed the road from Wilton to the windmill will perhaps appreciate the frightening prospect of descending this hill with four wagon loads of bricks and only hand braking on the loco available. The loco always preceded the train down the steeper of the two gradients in deference to the loose coupled wagons.

The line was opened in 1902 and was operated by an 0-6-0 saddle tank engine named *A.J. Keeble* but this could not always cope with the gradients and, especially in wet weather, often found itself sliding downhill in the direction opposite to that required. It was replaced in 1907 by *Progress*, an 0-4-0 of not dissimilar design and equally inadequate brakes. Trains usually consisted of six open wagons, four loaded with bricks and two empty on the way from the works and two loaded with coal and four empty in the reverse direction. Production usually necessitated two journeys each way every working day. There were three sidings and an engine shed at the works while loaded brick wagons waited on the two goods refuge sidings north of Grafton Station for daily collection.

The line had a delightfully 'Titfield Thunderbolt' parochial quality. The driver and fireman were local men and not averse to a little freelance overtime shunting at Grafton when financially induced by MSW station staff. Local lads would save the fireman the trouble of opening the crossing gates over the lane from East Grafton to Crofton in return for a ride to the station, either on the footplate or on the bricks. As the trackbed was narrower than the lane, the gates had a hinged extension. On one occasion, when the brakes were released too early at Wilton, the gates were saved from the runaway by these youthful assistants although on this occasion they did not get their reward as the train could not be stopped until it reached the main line. Other gates on the line were not so fortunate when two wagons ran away from Dodsdown on their own and only halted when they came to the level section.

The disappointment of the local population can be appreciated when, in 1910, the barracks were completed and the little line closed, ending a small but interesting episode in the history of the MSW. The map opposite was surveyed and revised either side of the line's lifetime but shows enough of the line (annotated 'Old Tramway') to, hopefully, encourage SUIAG members to return and investigate. Current metric contours with a ten metre vertical interval have been superimposed.

Jon Sims

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Water Softening at Twyford Waterworks

Background

The lime softening process for removal of hardness in water, as used at Twyford Waterworks (SU 493249) between 1903 and 1969, was developed by a Dr. Clark in 1841 and, as such, is sometimes referred to as Clark's process. It was first used commercially at a London waterworks in 1854. It is worth noting in passing that the lime process only removes part of the hardness in hard water – that caused by carbonates. Another process, known as the Lime-soda process, was patented later, in 1878, which removes all the hardness. However, as the lime-soda process involves more difficulties and costs, it was seldom used in waterworks, the carbonates removed by the Clark process causing the majority of the hardness. The Clark process consists of three chemical reactions or stages:

(i) Burning limestone or chalk in a kiln to produce *quick lime*
(ii) Slaking the *quick lime* and diluting to produce *lime water*
(iii) Adding the *lime water* to water pumped from the chalk aquifier, whence precipitates are formed in the water which can be removed by physical means.

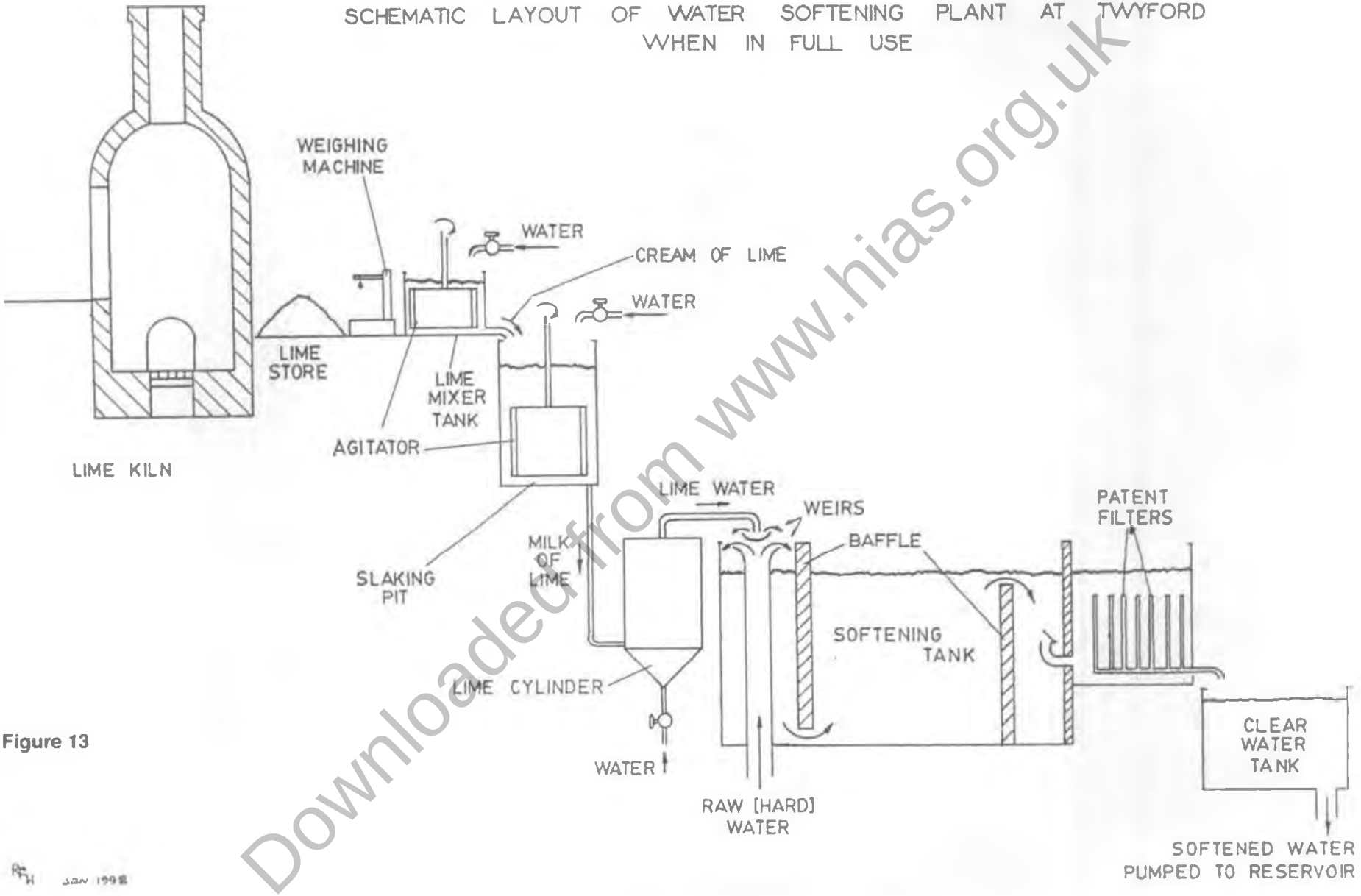


Figure 13

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Twyford Limekilns

The five kilns at Twyford were built in two batches, the original two kilns when softening started in 1903 and a further three kilns in 1929. The 1929 kilns were built to identical internal dimensions and many external dimensions as the original kilns, the consistency being notable, even to the extent of a note on a drawing for the new kilns which states *"chimneys to finish at same level as existing"*. There are external differences between the kilns, the most noticeable being that the original kilns are within a building while the additions are in the open, with charging and stoking areas covered by corrugated iron lean-to structures.

All kilns consist of a grate in which the fire is kept burning with ash-pit below, the area where the chalk is burnt, a dome over this area and a chimney to assist in drawing the fire and carry away the gases. The kilns are built of ordinary stock bricks, with an internal lining of firebricks to withstand the heat of burning. The lining is 4½" (110mm) in the chimney and grate, and 9" (225mm) thick in the dome and where limeburning take place, but this reduces in thickness as the kiln is used. The use of firebrick in contact with quicklime is interesting as it would appear to be unsuitable because the quicklime, being strongly alkaline, attacks the mildly acidic firebrick. However, experience and economics has, over the years, proved firebrick to be the most suitable for this purpose. It does mean, however, that the lining of the kilns is eroded, as inspection inside the Twyford kilns readily shows. Indeed, patches of new firebrick in No 1 kiln are evidence of repair of the lining shortly before the kilns became disused.

The height of the kilns is a little deceptive as they are usually viewed from an intermediate level. From bottom of ashpit to top of chimney is about 26ft (8m). At first sight the interior of the kilns appear cylindrical, but in fact they are 8ft (2·5m) from front to back but only 6ft wide, there being a 2ft (0·6m) parallel section. This necessitates complicated brickwork where the body of the kiln and the dome join. The ash-pit is just over 1ft (0·3m) wide and extends from the stoke hole area but stops 2ft (0·6m) short of the back (charging floor end) of the kilns. Across the pit and 18" (0·5m) above the floor are five 3" (75mm) square iron beams which support the firebars. There are 20 firebars to each grate, four bars 2ft (0·6m) long front to back (hence the ash-pit is 8ft (2·5m) long) and five across the pit. The firebars are of normal firebox type, resting loosely on the cross-beams. Above the grate at the stokehole end is an arched opening for firing the kiln, the fuel having to be thrown 8ft to reach the back of the grate.

Over the years, many shapes and sizes of limekiln have been used but, disregarding modern rotary kilns, limekilns can be divided into two types – *flare kilns* which are fired from a grate and where the fuel does not come into contact with the charge, and *mixed feed kilns* where chalk or limestone and fuel are charged in alternate layers. The advantage of the former is that there is no contamination from the fuel if coal is used, but it uses more fuel for a given output of lime. The Twyford kilns are of the flare type, and thus are alternately heated and allowed to cool down to remove the burnt (or quick) lime. The charge of chalk was usually built part-way up the charging door, which was bricked up as filling proceeded. However, in a report of 1913 and from verbal information from someone who remembers the kilns in use, layers of fuel and chalk were added at the top of the charge and the kilns filled so full that the person placing the chalk inside the kiln could only get out through an inspection aperture in the side of the dome. Firing the kilns in this way produced the worst of both worlds in that the grate firing had to be maintained to convert the chalk below the first layer of fuel in the charge and the upper part of the charge could become contaminated from the fuel. Admittedly, by doing this, more lime could be produced from each firing of the kiln and this uneconomic method of working could be tolerated at Twyford because, within the waterworks, normal commercial criteria did not apply.

What is needed for the kiln is a supply of chalk which, at Twyford, was quarried at the back of the waterworks, and a supply of fuel, usually coal. This was bought from South Wales, delivered by rail to Shawford Station and carted the 1½ miles (2km) from there to the waterworks. Theoretically, wood is a more suitable fuel for limeburning as it burns with a cooler flame, but the practical difficulties of obtaining a sufficient quantity for full-time operation and the almost constant firing required, results in coal or coke being used. The gases which come out of the chimney are the normal products of burning the fuel, plus carbon dioxide given off by the conversion of chalk to lime. While the production of CO_2, a so-called 'greenhouse gas', may cause some concern, it should be recognised that, over a period of months and years, the lime absorbs CO_2 back from the atmosphere.

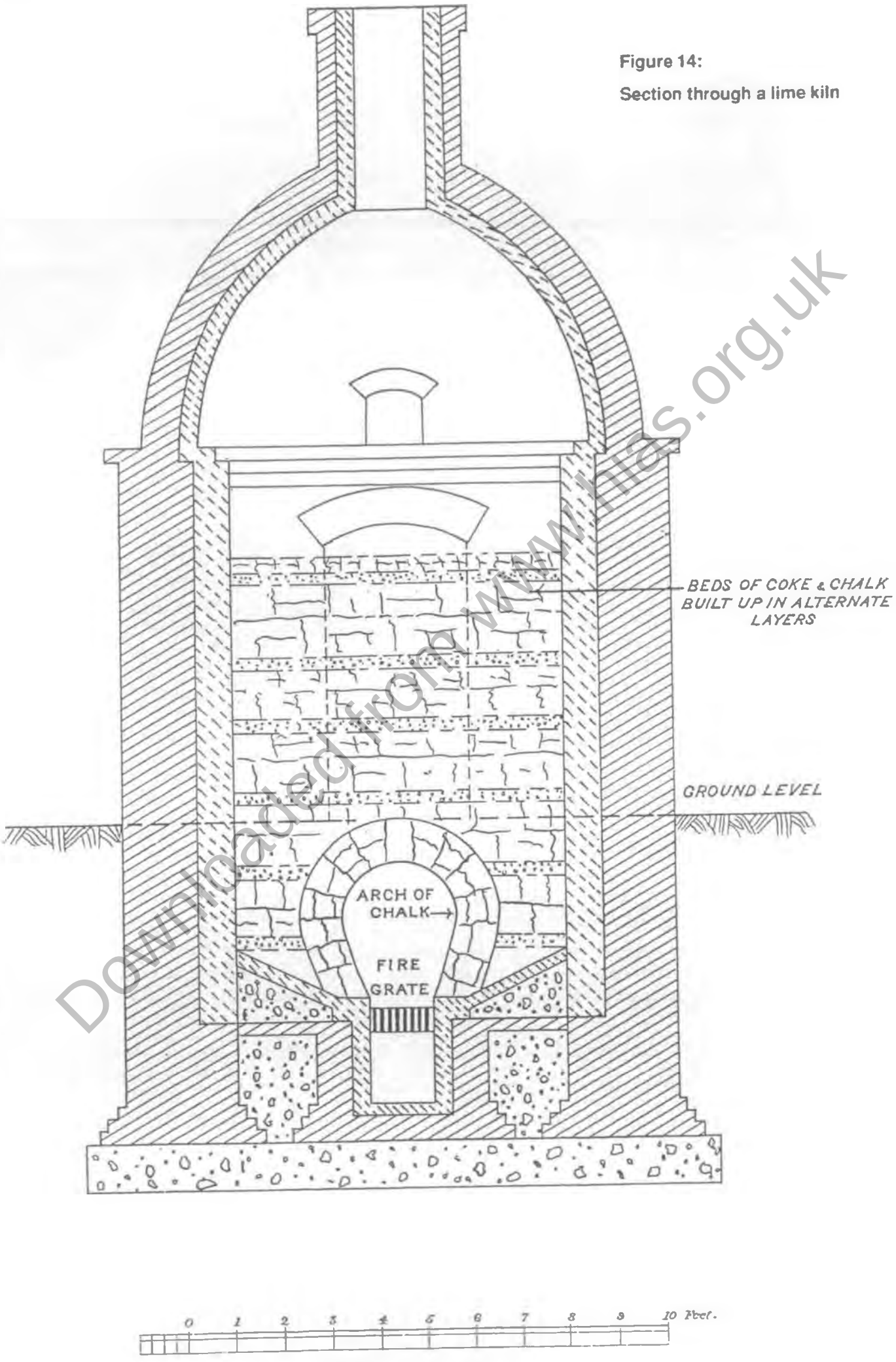
Patent Water Softening

This entails adding the *lime water* to the hard water, whereupon the bicarbonate dissolved in the water reacts with the lime water to form insoluble precipitates, or small solid particles, in the water. The usual procedure in waterworks was to provide several large water tanks in which the precipitates from the softening could settle out to the bottom of the tank over a period of hours, the softened water then carefully drawn off and the sludge, formed of the precipitates, removed from the tank before refilling. However, this was not followed at Twyford. A patent filtering process was used to remove the precipitates which speeded up the process.

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Figure 14:

Section through a lime kiln



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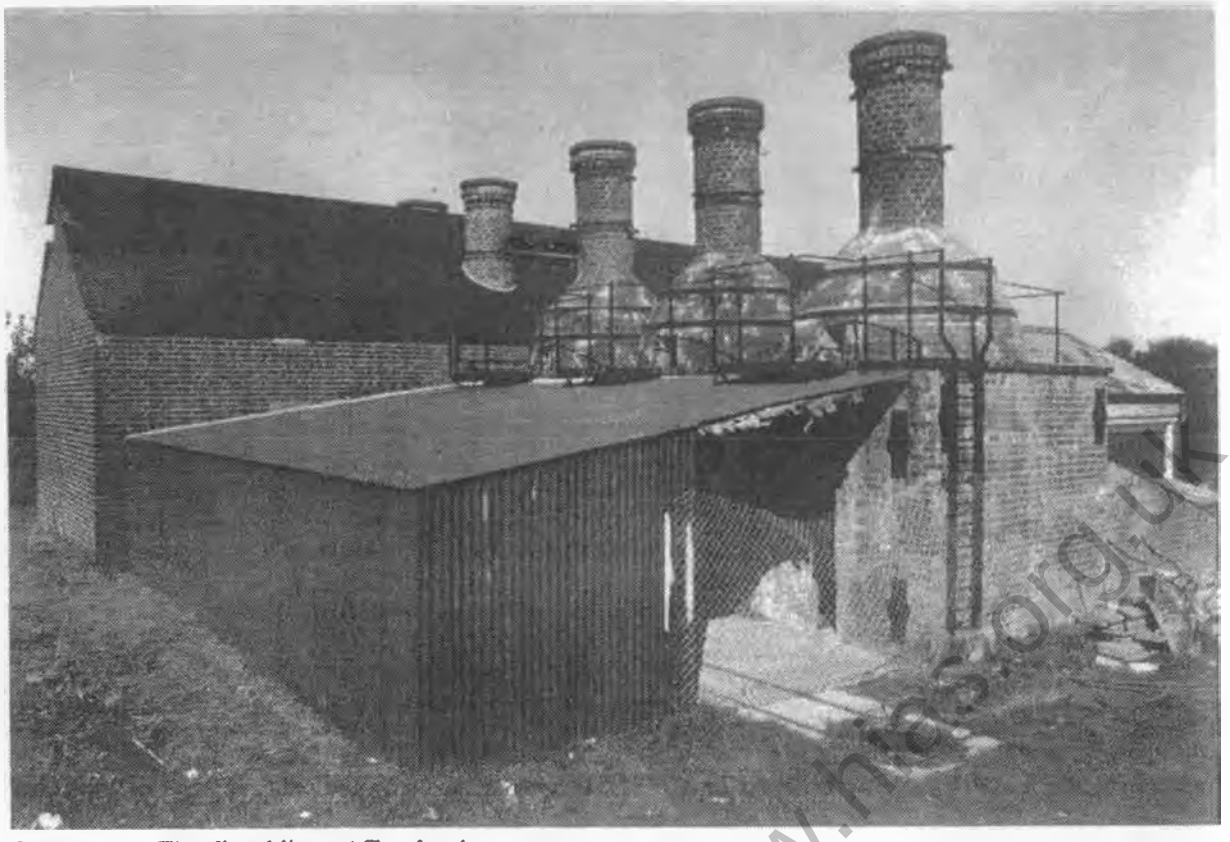


Figure 15: The five kilns at Twyford

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As could be expected, relations between neighbouring water supply undertakers could be close. This appears to have been very much the case between the South Hants Water Co and the Southampton Corporation water undertaking based at Otterbourne, only 1½ miles (2km) away. One result was the installation of softening and filtration equipment to the patent of Mr C Haines who was on the engineering staff at Otterbourne. In the archives at Twyford there is a photograph entitled *"The Engineering Staff"* with Mr Haines, along with colleagues, Mr W Matthews and Mr E T Hildred to commemorate the starting of the new pumping engine and softening plant at Otterbourne in March 1896. The photo shows a moustachiosed gentleman about 40 years old in a dark suit. It is noticeable that Mr Haines wears a modern collar and tie while his colleagues sport the Victorian high collar and old-fashioned tie. The impression is of a more modern, go-ahead person, but at that time junior to his colleagues. Mr Haines filed three patents early this century. Two of these – *'Improvements in the Process of, and Apparatus for Softening Waters and Purifying Waste Liquors'* of 1901 and *'Improvements in Filters'* of 1900 were applied at Twyford.

A study of Haines's patents, along with plans of the filter house and softening tank in the Twyford archives shows such similarities that the equipment on the plans can be identified from the patent specification. In the 1901 patent, a simple flow line is illustrated. Milk of lime is fed into a "re-agent" tank and a saturated solution of lime flows from this to the end of a pipe, where it flows down and radially over the edge of an inverted mushroom-shaped end which is centrally located just over the bell-mouthed end of the vertical pipe up which hard water flows into the "mixing tank". This arrangement of introducing the lime water to the hard water is specially mentioned in the patent. Close to the inlet end of the tank there is a baffle, partitioning the end off, underneath which the water (plus lime solution and any precipitates) flows into the main body of the tank. Close to the other end of the tank is another division forming a weir over which the water flows into the third section of the softening tank. In this third section are outlets to Haines's patent filters. These consist of fine-weave cloths fitted sleeve-like over perforated hollow metal plates immersed in water, the water passing through the cloths, which filter out the precipitates and the now softened water flows through the plates and on to a reservoir.

On plans of the filter house at Twyford, a pipe is shown from the lime mixing house to large cylinders, or drums, on the north side of the filter house. These, by their shape and position, obviously are the "re-agent" tanks of the patent. However, the saturated solution of lime, instead of being introduced to the softening tank at the nearest end, is conducted along the east wall of the softening tank to the south end. The inverted mushroom end immediately above the bell-mouthed vertical raw-water pipe, which are an important part of the patent specification, are still *in situ*, on the right, just inside the south door to the softening tank. The platform inside the south door rests on the top of a wall, at the bottom of which are openings between the water inlet and the

main body of the tank. This wall corresponds to the baffle in the patent. Close to the north end of the softening tank is another wall and this corresponds to the weir in the patent. Also in the north wall of the tank are pipes which, before they were removed, conveyed water to the filters. Thus it is clear that the water softening equipment was designed to use the patent. What, if any, royalties were paid to Mr Haines by the South Hants Water Co for the use of his patent is not known at present.

Filtering of water after softening was not new. In another commemorative photograph of 1896 the new filtering equipment at Otterbourne is shown which is totally unlike the filters in Haines's patent. The ideas for the patent specification clearly resulted from experience of operating the 1896 filters at Otterbourne. Considering the 1903 start of water softening at Twyford, only a couple of years after the patents, it is likely that the Twyford plant was the first large-scale application of the patents. It may be the only application; does anyone know of any other locations where Haines's patent filters and water softening arrangement were applied? Was Otterbourne ever supplied with this equipment at any time? In view of the uniqueness of the Twyford water softening arrangement, Charles James Haines appears to have a singular memorial in that of all the water softening arrangements at one time extant in public water works, his patent arrangement is the only one to be preserved.

So far, only two of Haines's patents have been mentioned; what of the third? Those of us on duty in the limekiln area on Open Days at Twyford Waterworks inform the visitors that it is calcium carbonate which causes hardness in water, calcium carbonate is used to soften the water and the end product, other than water, is calcium carbonate. A few of the visitors, not totally bemused by the information, ask why the calcium carbonate at the end is not taken back to the start of softening and used again. Mr Haines's third patent is to do just that; entitled *"Lime from By-products"*, the patent specification directs a thickening of the slurry from the filters by settling in tanks, then adding *"8% of chalk or such like binding material and 2% of coke or furnace breeze"* and mix them thoroughly *"in an edge runner or mixer"*. The mixture is then *"pressed into suitably shaped blocks and burnt in an ordinary limekiln"* or a rotary kiln. There is no evidence, apart from possibly the settling tanks on the north side of Hazeley Road, that the patent specification was tried out at Twyford. The expense of thickening, mixing, pressing and drying was uneconomical compared to going outside the 'back door' and digging more chalk out of the pit.

Dr Rodney Hall

A Visit to the Cwmorthin Slate Quarry

"Cwmorthin Slate Quarry is one of the outstanding industrial archaeological sites in the Blaenau Ffestiniog area. Initiated as an opencast working in 1810, it grew into an enormous underground quarry employing over 500 men in 1880. Chambers were worked in two veins of slate, the Old Vein and the Back Vein, on 17 floors over a vertical height of 800ft. Cwmorthin was amalgamated with the great Oakeley Quarry of Blaenau Ffestiniog in 1900 and was worked by levels running two miles through the mountain to Blaenau."



Figure 16: Station site at Penmaenpool; hotel buildings on the right

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Figure 17: The *caban*

This description is taken from Isherwood's cyclostyled booklet which, in addition to nearly 100 pages of historical information, includes two maps showing the multiplicity of underground chambers and galleries. (See References; Oakeley Quarry Grid Reference SH 682468). Cwmorthin was closed in 1934, and the visit by the present writer was made in June 1983. The visiting party consisted of members of the Open University Geological Society and the Southampton Geological Field Study Group, led by Graham Hall, then Warden of the Youth Hostel at Kings near Dolgellau. However, the present writer opted for accommodation which offered a railway historical background, combined with more comfort. The Cambrian railway's branch line from Barmouth Junction to Dolgellau had been closed in 1965 but the George III Hotel incorporated part of the former station at Penmaenpool. [Fig. 16: Grid Reference SH 695185].

An insight into the life of a slate miner was gained from inspecting the decaying cottages which once provided accommodation, and then following the path along which the miners trudged to perform their 12-hour underground shifts. (In slate terminology, the word "quarry" includes both quarries and mines). The long periods of isolation are thought to have been one of the driving forces behind the practice of using the *caban* not just for meal breaks, but also for holding mini-Eisteddfodds [Fig. 17]. In the Harlech Dome, the slate lies in a form comparable to a "plum duff" in which the outer part was of slate. The workings at Cwmorthin consisted of chambers, linked by connecting galleries, in which the slate was worked on slopes of about 40 degrees, both upward and downward, as well as across the top. It was conveyed along the galleries in tubs and, although none of these were seen, lengths of railway track remained *in situ* [Fig 18].



Figure 18: Railway track on floor of gallery

We were warmly clad, with miners' helmets fitted with lamps, and carried secondary torches, spare batteries and packs of food. The cold and darkness were demonstrated when we were directed to extinguish our lights and, after we had experienced total darkness, our leader lit a miner's candle. He pointed out the dangers of falling into abandoned workings, and indicated the remains of a cat walk which the miners had used for crossing over abandoned chambers [Fig. 19]. Another danger came from roof falls. Because of this, there were rules about the width of columns left unworked in the chambers. However, a situation did arise when different owners

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worked at different levels. It cost more to bring out the slate from the lower levels, and to compensate for this, sometimes the rules were not observed. We were told that on one occasion, 6 million tons of roof collapsed, fortunately without fatalities.

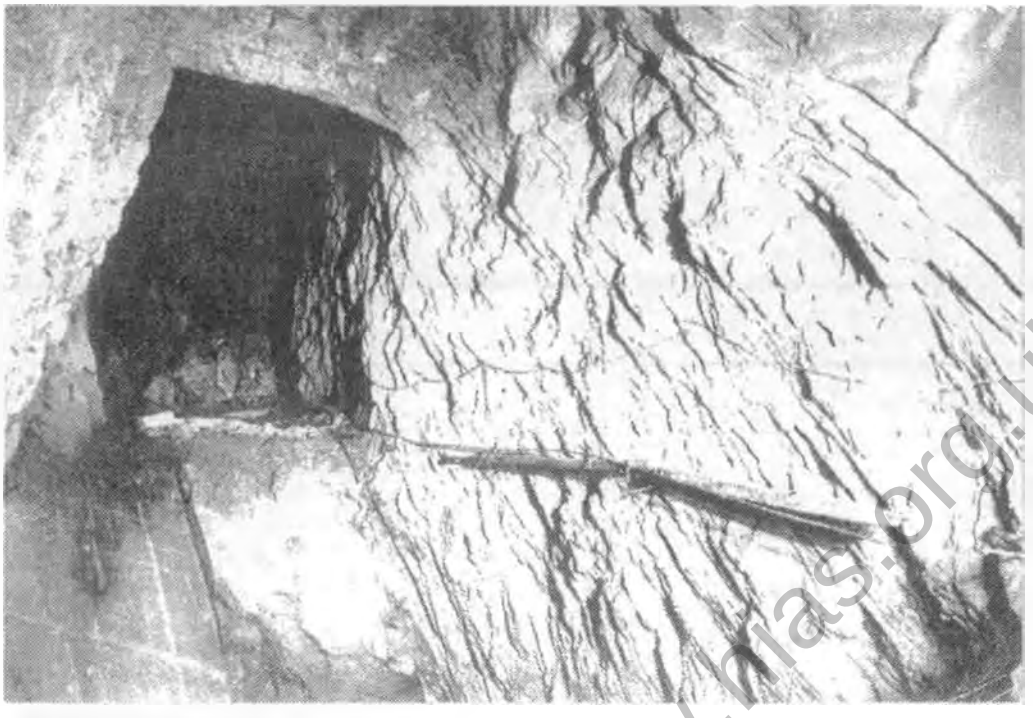


Figure 19: Remains of a catwalk

Two more parts of the tour come to mind, illustrating the fortitude of the participants. We had to traverse a gallery where the water was both knee deep and freezing cold [Fig. 20]. Air temperature was low but so was the humidity so, on leaving the water, within minutes we had "steamed" dry. Next we had to climb a water flooded face, with a vertical drop of about 12 feet, assisted by no more than a rope. We finally ascended a scree slope and, with great relief, reached a part of the quarry open to the general public. They regarded our group with surprise, doubtlessly wondering what we had been doing. Readers of this account know!

Roger Hedge

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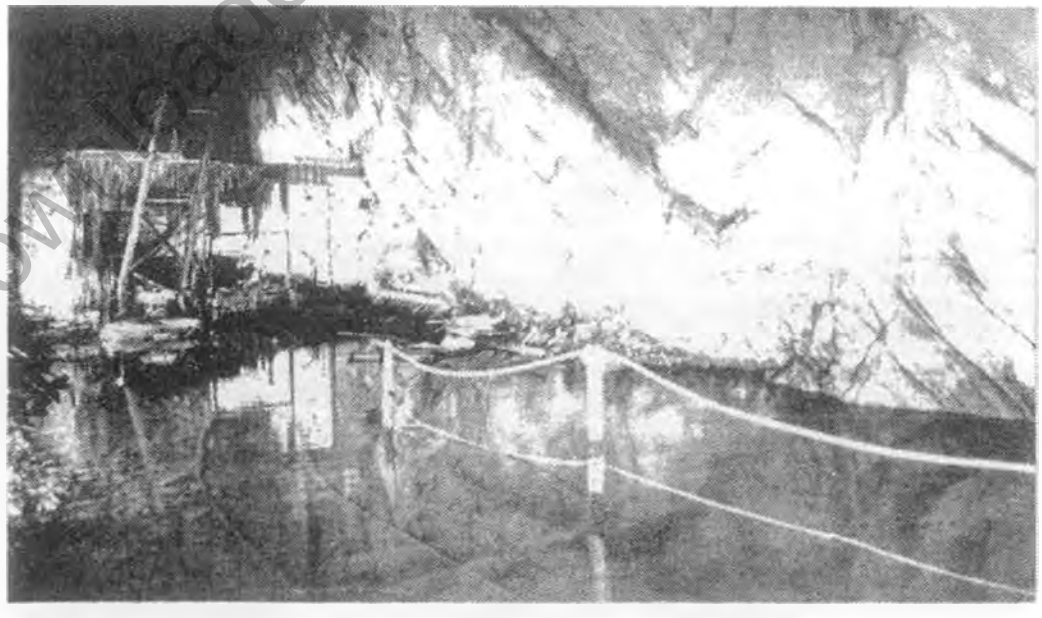


Figure 20: Flooded gallery; remains of winding drum on the left

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The Schultze Gunpowder Company in the New Forest

1. Introduction

The hamlet of Fritham [Fig. 21] is situated in a remote part of the New Forest, at the end of a country lane leading off the B3078 which runs from Brook to Fordingbridge.

Apart from farming and forestry, Fritham is known for the Schultze Gunpowder factory, which manufactured smokeless gunpowder at Eyeworth Lodge from 1896 until 1923 (grid ref SU 228146). At its peak it was one of the largest industries in the New Forest, starting with three wooden huts in 1865, and expanding to more than 70 buildings by the 1920s. The factory covered an extensive area with the buildings scattered throughout the site to reduce the risk of mass destruction in the event of an accidental explosion. Initially, gunpowder was manufactured for the Prussian army in the 1870 Franco-Prussian War, and thereafter it was produced for sport shooting (Barton: 1989, 70). In fact, the Schultze factory produced powder which became known as the *"Champion Sporting Powder in America, England and Europe"*, according to a Trade Pamphlet which was published c.1896.

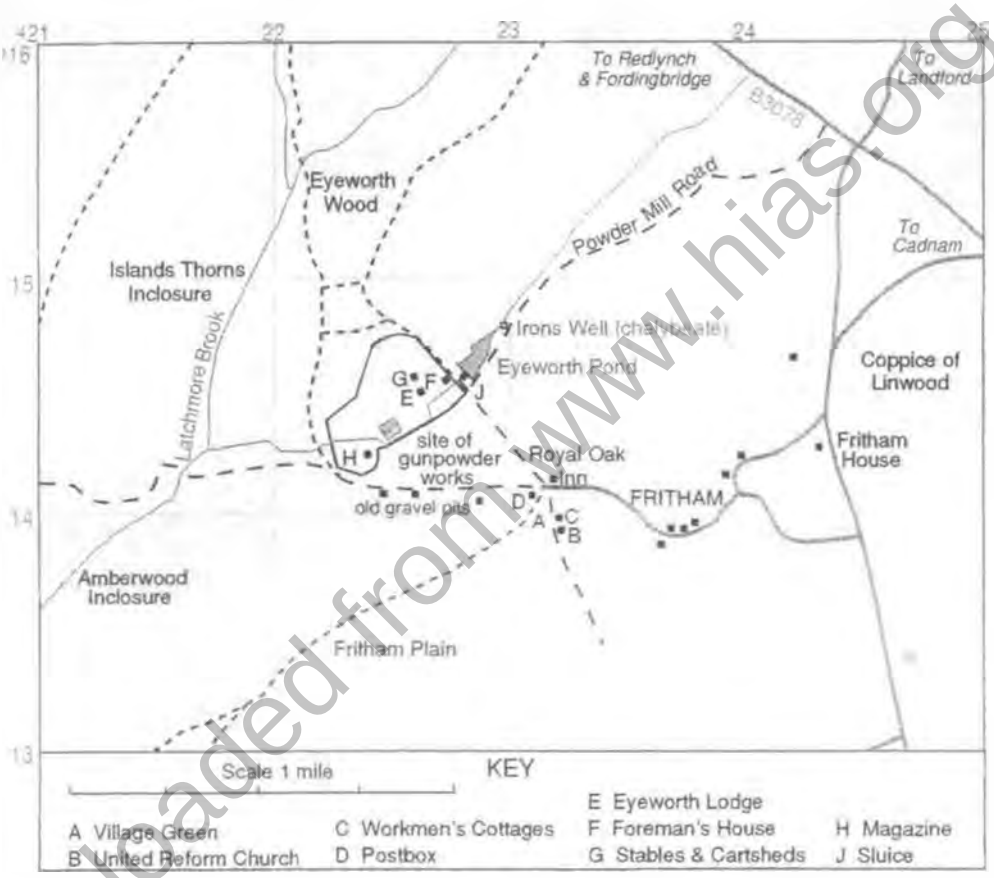


Figure 21: Map of the Fritham area showing location of the gunpowder works (based on the Ordnance Survey 1:25 000 Sheet SU21)

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2. How was the gunpowder made?

Traditionally, the manufacture of gunpowder involved the mixing of sulphur, saltpetre (potassium nitrate) and charcoal (carbon) without any reaction occurring between them (Cossons: 1987, 211). However, at the Schultze factory a different system was employed which involved chemical changes, using soft wood fibre from the alder tree. In the 1860s the alder was most probably supplied from the nearby forest, but later it was imported in prepared sheets from overseas (Stevens: 1929, 199).

Briefly, the manufacturing process involved the following:

1. The wood pulp was dried, then treated with acids (three parts sulphuric and one part nitric) in the NITRATING TANKS, to destroy all resinous matter and change the pulp into an explosive nitro-compound.

2. Surplus acid was then removed by washing in warm and finally boiling water in large vats in the PURIFYING HOUSE. This process lasted four weeks.
3. The material was dried again in one of the DRYING HOUSES by means of hot air blasts.
4. The material was then taken to the GRINDING HOUSE where it was ground with various necessary chemicals under five-ton edge runners.
5. By this time the compound was an explosive, and the powder was then sent to the "danger area" to be hardened in the HARDENING HOUSE. It was tested for internal pressure, rapidity of ignition and velocity of the shot, along with chemical tests for purity of composition. Finally, sifting, grading and packing took place.
6. The powder was stored for three months in the MAGAZINES, and then again retested.



Figure 22:

Magazine for storing the gunpowder. Bob Hiscock in Henderson (1989, 180) states that "magazines were dotted all over the extensive grounds of the factory and were well covered with thick mounds of earth" (possibly taken from the reservoir)

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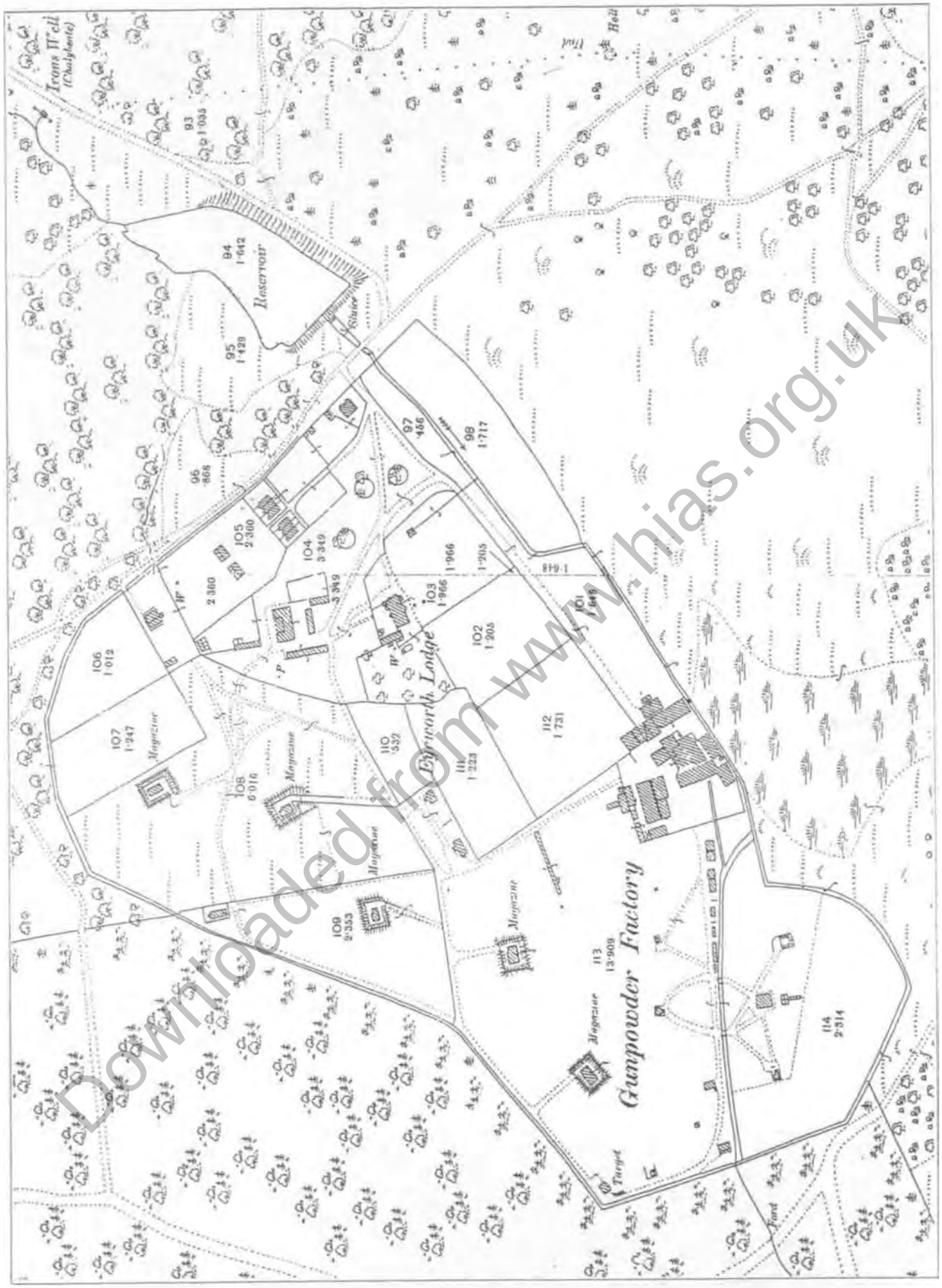
After the manufacture, what happened to the gunpowder? In 1883 a gravel road was built from Eyeworth to the Cadnam to Fordingbridge road, which still remains as a trackway known as Powder Mill Road [Fig.21]. This track was built so that powder could be moved to the Company's Redbridge works (near Southampton) without passing through Fritham, thereby avoiding the risk of damage to local dwellings and injury to the population in the event of an accidental explosion.

As described above, the manufacture of smokeless gunpowder required vast quantities of water. This was initially supplied from the nearby stream which was fed by the Chalybeate spring (containing iron salts) to the east of Eyeworth Lodge. When the factory began to expand, a request was put to the Office of Woods for a dam to be built to trap the water in a reservoir, and in 1871 Lawrence Cumberbatch, the Deputy Surveyor, gave permission for a small dam to be built on the Open Forest. However, the project did not proceed immediately because the Commoners objected, and it was not until 1883 that the dam was finally built and a large pond created, known as Eyeworth Pond [Fig 23]. Riley (1994) comments that the reservoir contained nearly six million gallons of water which fed the BOILERS which supplied power for the grinding machinery and heat for the drying sheds. Henderson (1989, 179) has written about an old man Bob Hiscock (born 1900); she records in his own words his reminiscences of boyhood. He visited the factory (probably aged 13/14) where his father worked, and said that coal was used to heat the boilers, 50 tons a week being brought from Downton Station.



Figure 23:

Eyeworth Pond is still full of water, but is probably silted up owing to the slower rate of outflow compared with gunpowder manufacture days



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Figure 24: Extracts from the Ordnance Survey 1:2500 County Series plans revised in 1895.
(The 1907 revision, reprinted in 1925 and 1943, has been subjected to 'security' treatment, with the 'Gunpowder Factory' and 'Magazine' annotations removed, and the banks surrounding the Magazines deleted. There were a few more buildings on the factory site and the reservoir has increased in size.)



Figure 25: Dam and Sluice Gate. A medium flow of water passes from the dam down a stone staircase to the stream below. A disused sluice gate can be seen

It is not clear how the factory was lit, whether by hydro-electric power from the dam, or by the coal which was transported from Downton. The 1896 Trade Pamphlet states that a DYNAMO HOUSE, containing two dynamos and an engine, *"supply some 300 lights, in addition to the arc lamps which, elevated on high poles, light up the whole Factory area, and enable the work to be carried on with comfort both day and night"*.

In the early years the factory encountered problems of pollution to nearby Latchmore Brook [Fig. 21] owing to leaking tanks and general carelessness. Despite this setback, Pasmore (1993, 5) comments that the business expanded significantly over the years, which can be noticed when comparing the number of buildings on the Ordnance Survey Six Inch maps of 1869 and 1909. During the 1914-18 War, explosive material for time fuses was manufactured, but after that the factory was taken over by the Nobel Combine and finally operations were transferred to Scotland and the buildings were demolished (Stevens: 1929, 200).

3. Conditions for the workforce

By 1900 about 70 men were employed on the day-shift and about the same number on the night-shift. They earned £1 a week and some of them walked six miles to work from Woodfalls (Barton: 1989, 70). Bob Hiscock in Henderson (1989, 179) states that workers were paid extra money if they used their own ponies to cart the gunpowder to the magazines. In order to attract labour to the remote location of Eyeworth, accommodation was built near Eyeworth Lodge and, in 1904, eight cottages were built at Fritham. A United Reform church was also provided by the company.

4. Archaeological evidence

At first glance, it seems that no evidence remains of the factory site, particularly because several documents state that the factory was totally demolished in the early 1920s. However, a perambulation of the factory site has revealed that there is some archaeological evidence, even though the area now comprises green fields where cattle graze.

It has been helpful to view photographs in the Schultze Trade Pamphlet to compare current evidence of the factory and associated buildings with that of c. 1896.



Figure 26:

The Foreman's house is little changed, except the entrance gates have been removed

5. Conclusion

Although information regarding the Schultze Gunpowder Factory is scant because no comprehensive research has yet been undertaken, from the industrial archaeology point of view a keen eye can detect some evidence of past industry. Geophysical techniques and excavation would reveal the shape and size of factory buildings but this would be a costly operation and would not clarify the particular

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Figure 27 (right): Postbox. This is hidden behind a holly bush on the opposite side of the village green from the cottages. It was erected by the Schultze Gunpowder Factory before 1900 for the use of the workforce, and also to ease the postman's journey (so he did not have to continue a further half mile to Eyeworth Lodge) who delivered and collected daily except Sundays. Charges were 1d a letter and ½d for newspapers. The post box was renovated by the Forestry Commission in 1976 (Moore, 1984, 70)

Figure 28 (below): Cottages for the workforce



purpose of individual buildings. It appears that the machinery used for gunpowder manufacture was probably scrapped or transferred to the works in Scotland and the building material sold for re-use, because apart from the features already described, nothing else remains to be seen.

Clare Church

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Spicers and the Alton Papermill

The old paper mill in Alton (SU 723395), on the northern branch of the River Wey in north-east Hampshire, ceased production shortly after the beginning of the 20th century, although it was not until the 1980s that the derelict mill buildings in Papermill Lane, below King's Pond, were demolished. Most histories of Alton will tell us that what was known as William King's papermill (although King was a tenant, not the owner) was taken over near the end of the 18th century by one John Edward Spicer, and that the mill continued making paper under the Spicer regime until 1909, when the whole of its production was moved to Eynsford in Kent. What is not mentioned is that from the small beginning at the Alton mill, the Spicer family developed a vast business in the UK in the manufacture and wholesaling of paper, stationery and office products, with many marketing ramifications overseas. Spicers International was formed in 1970 and, in 1976, this operation was transferred to Reed International Trading. Today, as this account is published 200 years after the arrival of the first Spicer at the Alton mill, there is no longer a Spicer connection with the company, although its present owners, David S. Smith (Holdings) plc, the largest British paper and packaging manufacturer, still run the group under the Spicer name.



Figure 29: Alton Tithe Award Plan, 1842, showing the Paper Mill (Kings Mill) and also (at the top) Anstey Mill

The part played by the Alton mill in the development of this family saga was a small one, but there can be no doubt that the mill was the original source of the whole enterprise. It is an interesting story, and it is told here using information provided in the plentiful Spicer Company archives, and from other sources as listed at the end.

The Spicer records establish that, at different times, the Alton paper mill was known as Upper Mill, Asp Mill, King's Mill and Alton Mill, and that its papermakers had close links with several of the paper mills in Surrey. The earliest discovered record of the mill is in an insurance policy of 1759, when Kendrick Peck, a stationer of London, insured the stock in his mill. Four years later an Ann Lamport of Alton Lower Mill (which could have been the nearby Anstey Mill or one of the Neatham Mills), and who is not known to have been a paper maker, insured the Upper Mill which was then in the tenure of Benjamin Godwin. Described as a paper maker, Godwin insured his stock and utensils in the mill in the same year. In 1768 the mill was being run by a William Barrett, but five years later he was bankrupt. In 1778 a Robert Myears was paper maker at Alton. He died in 1780, and an advertisment stated that the mill had two vats.

When, in 1784 and 1791, Mrs Lamport again insured the mill, including the sizing house, rag house and drying loft, William King was the tenant. When he left in 1796, both the mill and the pond had acquired his name.

It is recorded that when John Edward Spicer came to the mill in Alton at the age of 30, the mill had been bought for him, although he had ample funds of his own. The purchase must have been for a tenancy, as Mrs Lamport was still the owner. A document found years later confirms the founding date to be 4th August 1776, and an entry in a bible also shows the same date. There seems to be little doubt that the Spicers were descended from the Spicers of Exeter, where members of the family repeatedly held the offices of Mayor, Sheriff and Bailiff from the 13th century. It is thought that the family entered paper making in Buckinghamshire in the 17th century when an Edward Spicer, born in 1642, started manufacture in a mill at Chepping Wycombe in 1660 – one of the earliest English paper makers. J.E. Spicer of Alton (1766-1845) was Edward's great-grandson. As a younger man, J.E. Spicer



Figure 30: Alton Paper Mill workforce

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had entered training for the Non-Conformist Church, but unfortunately he had a stammer and, because in those times the ability to preach well was of such importance, he was not ordained and had to forego the Church as a vocation. He learned about papermaking from a mill-owning uncle and, once settled in Alton, seeing to the production of paper and establishing a large family, he still managed to fit in some preaching in the town and surrounding villages.

Paper in those days was hand made from pulverised rags of cotton, linen, wool and silk, and the Alton mill continued making its paper in this way throughout its working life. Old military clothing from the Napoleonic wars was widely used in the earlier days, and it was said that the bottom of King's Pond became bestrewn with the buttons cut from the old uniforms.

As Spicer-made paper emerged from the mill, it was sent to London for sale to the printers. John Edward was a man of stubborn individuality and something of a dictator in his market. An article in the publication *The Idler* (date not given), written by one Robert Barr, gave a portrait of this old 18th century manufacturer, confirming that his paper was of the highest quality, but made in sheet sizes to please himself. He sent his paper to London, the article continued, by slow-going wagon, following later on horseback to tell the printers what shaped books they could produce from his sheets. He seemed for a time to have a monopoly of the book paper business and, after shovelling his takings into a saddle bag, he rode back to Alton suitably armed against highwaymen, whom he more than once beat off successfully while crossing the lonely heaths between London and Hampshire.

The depression following the end of the Napoleonic wars hit John Edward hard. The mill was full of unsold paper and had to be closed for a time. Leaving his son, John, in charge, J.E.S. took the rest of his family off to London, where he started another business of wholesale stationers under the name of J.E. Spicer and Sons. Paper stocks from the mill in Alton and from others' mills were also made available to printers in whatever quantities they desired, and the enterprise did well.

In 1830 John Edward became the owner of the mill in Alton and, between then and 1860, several operatives were involved with the Spicers. John Edward was running the mill with Cornelius Poulton in 1842, and Poulton was also with Spicers at Wandsworth paper mill at this time, succeeded by a variety of other partners in later years. In 1845 John Edward died at the age of 79, and the firm of J.E. Spicer and Sons was renamed Spicer Brothers (Edward, Henry and James), with offices at London Blackfriars.

In 1847, a George John Graham, paper maker, took on the Alton mill, but a year later it had left off business. Becoming interested in machine-made paper, Spicers took over Chilworth Mill in Surrey but, in 1852, John Edward (presumably the younger) of Chilworth and Alton was bankrupt. In 1855 the paper maker at Alton was G. Crafts, but the Spicer family family was still involved and by 1860 their fortunes had changed. The mill was still making hand made writing papers and business was flourishing.

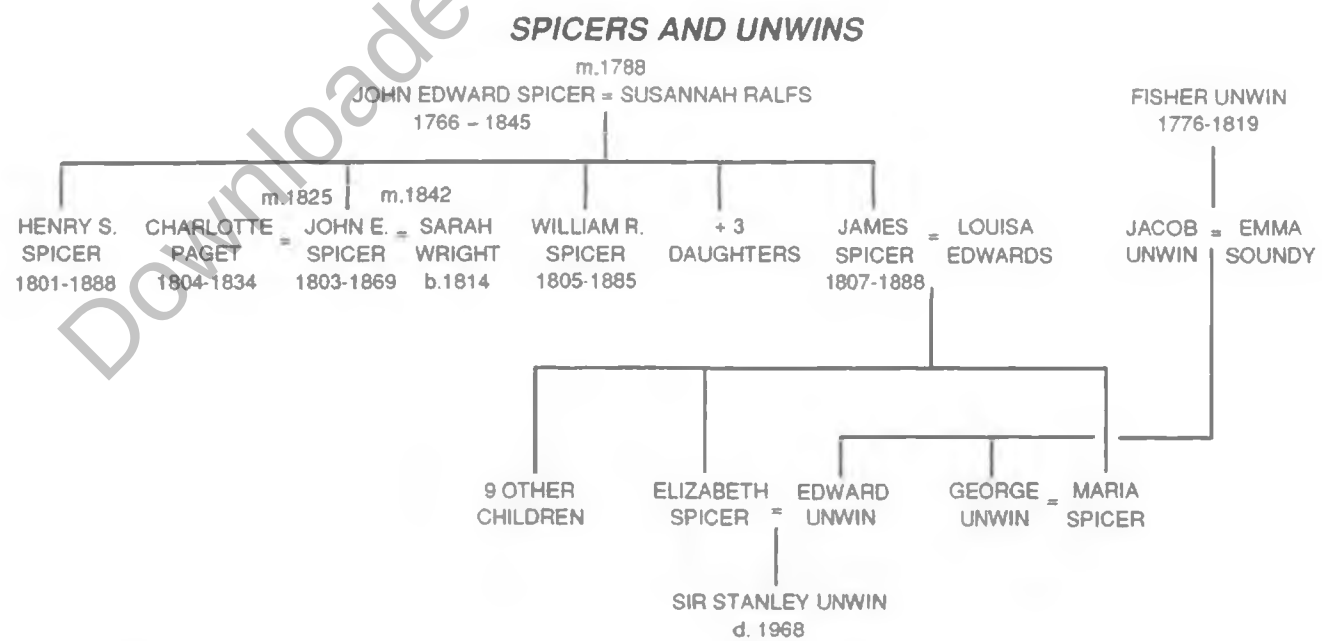


Figure 31: The Spicer family tree

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Key to Plan

1 Rag sorting house, store over
2 Rag boiling house
3 Washing and beating engine house
4 Bleach house
5 Vat house
6 Finishing and glazing room
7 Pack pressing and parting room
8 Sizing room
9 Size boiler
10 Felt washing house, formerly alum house
11 Sol with floor over
12 Pack drying house
13 Counting house and office
14 Boiler house
15 Chimney shaft
16 Brick built engine house
17 Wheel house
18 Lathe shap and pattern loft over
19 Carpenter's shop
20 Dwelling house
P. Passages

Figure 32: Plan of the buildings at Alton Paper Mill, 1888

(Spicer Ltd: Based on a drawing in the report of the public auction, Paper Trade Review, 25 May 1888)

Until this time, power for the mill had been provided from the wheel driven by the head of water in King's Pond but, in 1865, steam power came into use for the hydraulic presses, beating engines and the glazing rolls, and 104 people were employed.

However, trouble was brewing between the Spicer Brothers partners about the allocation of positions being given to the various sons who were entering the firm. Differences about management also arose, and so in the end came the great breach between these strong-willed businessmen: James Spicer broke away in 1865 and with his sons formed the rival company of James Spicer and Sons, Stationers of London. The Spicer brothers Company continued as before, without James, and with the Alton mill operating under H. and W.R. Spicer and Company, paper makers. In addition, another mill was acquired at Catteshall in Surrey to make machine-made paper from esparto grass.

The work at Alton expanded in the 1870s to include drawing, account book, bank note and parchment papers. The number of vats increased to eight, making six tons of paper a week. But competition from machine mills was strong and, in 1888, the Alton mill was offered for sale by auction, still with the old watermark *'William King. Alton Mill'*. The bidding was poor, and the sale was abandoned. Four younger members of the Spicer family took over the mill and its production continued, with reduced output, until it closed for the last time in 1909.



Figure 33: Alton Paper Mill buildings in 1970

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It is interesting to note two highly significant factors that contributed to the phenomenal success of the Spicer enterprises. The first arose from the original evangelical spirit that John Edward Spicer brought to Alton in the 18th century. The Spicers became one of the leading families of the Congregational Church, and from the very beginning they took their strong principles into the operations of their commercial enterprises. At Alton, every Monday morning before the week's work began, a short service was held in the mill. Both of the Spicer Brothers and James Spicer and Sons Companies inherited this tradition, and it was the practice of the partners to hold a 'family' service weekly.

The second significant contribution to growing success and prosperity was the large and close-knit families produced by the Spicers, which provided an almost unlimited source of family representation in the managements and partnerships proliferating at home and overseas.

James Spicer's wife Louisa provided 11 children; two of their daughters, Maria and Elizabeth, through their association with the local Congregational Church in London, met and (despite objections from their authoritarian father), later married two brothers in the Congregationalist family of a London printer, Jacob Unwin. These two alliances succeeded in producing 19 children between them, and contributed to the origins of the well-known Unwin family of publishers. One of the children of Elizabeth (Spicer) and Edward Unwin became the influential publisher Sir Stanley Unwin, who died in 1968.

All of Jamers Spicer's sons followed successful careers in the paper business. One of them, Sir Albert Spicer, was also a Liberal MP, became Chairman of the Marconi Committee in 1912 and later a Privy Councillor. Another was Sir Evan Spicer, the first Chairman of the London County Council. (P. Unwin, 1972).

The Spicer companies continued to open new premises in major towns and cities in the United Kingdom, and a large factory was opened in 1901 in south-east London. Merchandising centres had also been established in Australia and South Africa in the late 19th century. In 1917, Spicer Brothers Limited purchased Sawston Mill in Cambridge (from where Spicers Limited operate today) and, in 1922, the two principal companies, which had been operating independently since the great division in 1865, came together as an amalgamation into one company. The new Chairman was Sir Albert Spicer.

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Martin & Sturt, Printers, Farnham.

Figure 34

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After Spicers had closed the Alton mill in 1909, with only two weeks' notice to its workers, there was something of an employment crisis in the town. During the 19th century the mill had become one of the most important hand-made paper mills in the country, but after this final stoppage it never again produced a sheet of paper.

In the 1914-18 War it housed German prisoners who were working on nearby farms. In 1919 the Alton Battery Company set up in the old buildings, using diesel generators as well as the ancient iron waterwheel to produce electricity, even after connection to the mains supply installed in the town in 1927. The big wheel went for scrap in 1940, and the battery works finally closed in 1958. Alton's Victoria Foundry moved from Normandy Street and used the mill premises for a time, before moving on to the town's growing industrial estate. A packaging services firm then took over. (C.W. Hawkins).

Fire damaged the buildings in 1983, after which the whole conglomeration of stone and brick structures, with corrugated iron extensions and the casement-windowed mill house, were knocked down in 1988, ultimately to make way for the housing development now established below King's Pond dam. The new buildings, although owing their appearance more to mills of the 19th, rather than the 18th, century are, together with King's Pond and its natural surroundings, by no means unattractive reminders of a piece of Alton's industrial past that got away, to grow beyond imagining in the world outside.
Philip Armitage

Sources and Note

Spicers Limited, Head Office, Sawston, Cambridge, CB2 4JG: *History of the Companies and Units.* (An internal compilation drawn from the Company archives and various County Record Offices, for Company training purposes. Unpublished)

Note: The principal Spicer records have been catalogued by a professional archivist and are now held in the Cambridgeshire County Record Office, Grammar School Walk, Huntington, PE18 6LF. Tel. 01480 425842.

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Unwin, Philip *The Publishing Unwins*, 1972, Heinemann, London, pp.15-20.

Acknowledgement

This Paper originally appeared in 1997 in the *Alton Papers* (Number 1), a publication of the Local History Group of the Friends of the Curtis Museum and Allen Gallery, Alton, Hampshire. Acknowledgements and thanks are made for permission to reprint here.



Figure 35: King's Pond, and the apartment buildings below the dam, replacing the burnt-out remains of the old paper mill

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