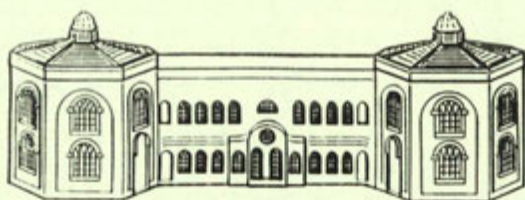


RETORT!

THE BULLETIN
OF THE
WARWICKSHIRE
INDUSTRIAL ARCHAEOLOGY
SOCIETY



SUMMER 1998

ISSUE EIGHT

RETORT!

The Bulletin of the
Warwickshire
Industrial Archaeology
Society

ISSUE NUMBER EIGHT
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EDITORIAL

I am writing this forty-eight hours after the first cancellation of one of our monthly meetings since Warwickshire Industrial Archaeology Society was launched. It is a mark of the Society's strength that it took the worst floods of the century to force this decision, although six members managed to arrive at Warwick School that evening, plus a very dedicated speaker and his wife who had battled all the way from Handsworth. Observing the extent of the floods and the power of the water in the subsequent days really emphasised the skill of man in both harnessing water as a source of power and in constructing bridges that could - in most instances - withstand the force of such a torrent.

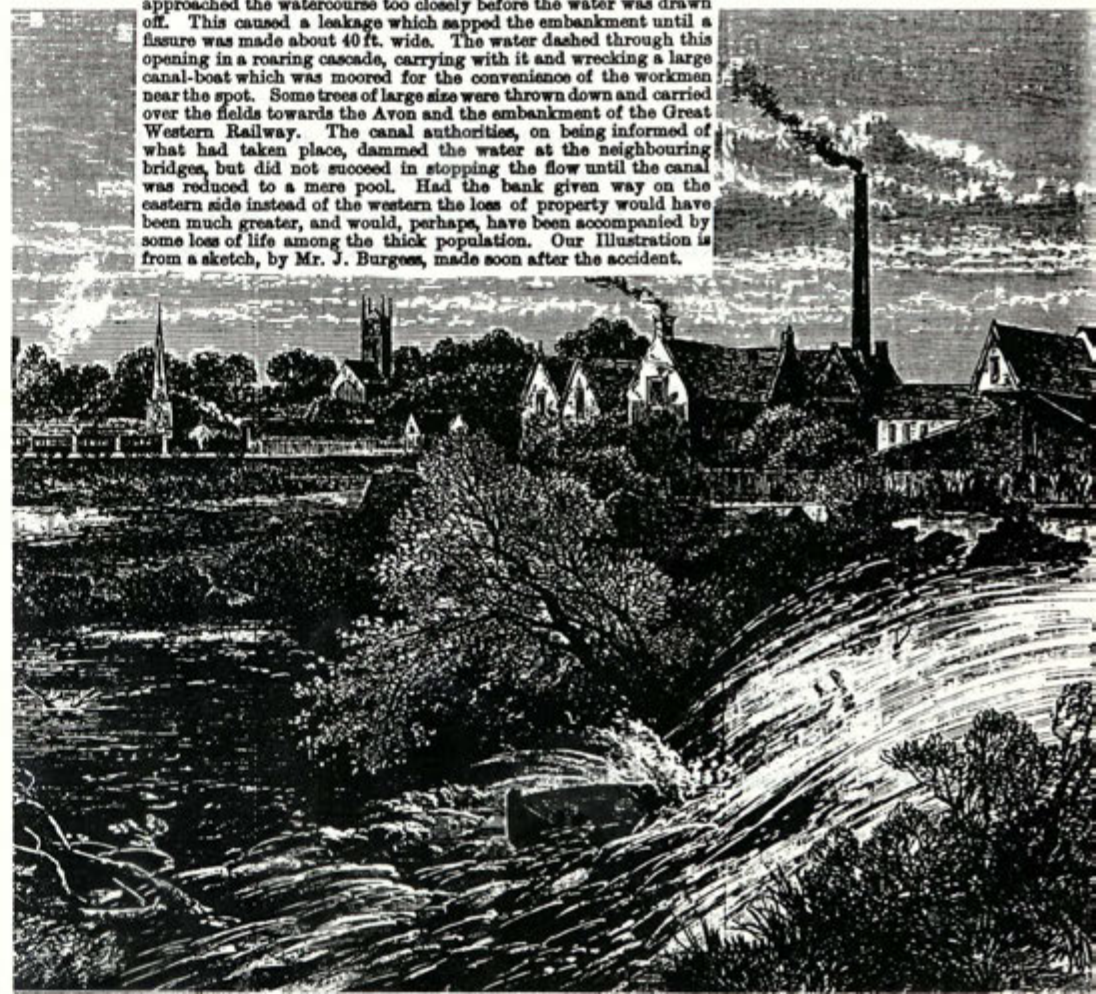
This edition of Retort! carries the programme of monthly meetings through into 1999. Once again, it is great credit to our Chairman, Toby Cave, that the range of subjects covered in these meetings remains so varied. We also have a number of contributions from our 'regulars', but, as always, we are keen to receive material (of any length) from anybody willing to commit pen to paper.

Martin Green

Evidence of river flooding in the past can be found in the flood water heights recorded on many local mills e.g. Rock Mill, Leamington or the Saxon Mill, Warwick. The Illustrated London News of Saturday May 29 1860 carried a report and picture of the bursting of the canal at Warwick as a result not of natural causes but engineering error.

BURSTING OF A CANAL AT WARWICK.

An accident took place near the town of Warwick on Sunday week which is shown in the Engraving on our front page. This was the bursting of the embankment of the Warwick and Napton canal, near Emscope Bridge, and the flooding of the country around. It seems that Mr. Baylis, contractor for the local board of Warwick, was engaged in constructing a portion of the main sewer beneath the canal which here crosses the Avon and flows some 40 ft. above the meadows. The traffic on the canal is usually suspended during Whitsun week; and it is supposed that the contractor's workmen, in order to take advantage of this circumstance to the utmost, approached the watercourse too closely before the water was drawn off. This caused a leakage which sapped the embankment until a fissure was made about 40 ft. wide. The water dashed through this opening in a roaring cascade, carrying with it and wrecking a large canal-boat which was moored for the convenience of the workmen near the spot. Some trees of large size were thrown down and carried over the fields towards the Avon and the embankment of the Great Western Railway. The canal authorities, on being informed of what had taken place, dammed the water at the neighbouring bridges, but did not succeed in stopping the flow until the canal was reduced to a mere pool. Had the bank given way on the eastern side instead of the western the loss of property would have been much greater, and would, perhaps, have been accompanied by some loss of life among the thick population. Our illustration is from a sketch, by Mr. J. Burgess, made soon after the accident.



The Avon House Works, Warwick

Report on a visit by members of WIAS in April 1997

by Arthur Astrop

Between Hill Street and Greville Road, Warwick, with its frontage full-square on to the Emscote Road, there stood - until May 1998 - a wartime factory. Built in 1943/44 by the then Ministry of Aircraft Production for the manufacture of aircraft instruments, it was designed to withstand what was described as 'minor explosive and incendiary bombs', and incorporated two air raid shelters and a decontamination area where workers could be treated after a gas attack.

It was officially described as a Grade 1 Shadow Factory, a term which for some may need a word of explanation. In the 1930s, with the likelihood of war growing steadily, the British government built a number of factories outside the traditional industrial zones of this country, since most of the latter were already well-known to the enemy, and meticulously mapped, as a result of ground and aerial reconnaissance. Most of the Shadow Factories were deliberately designed to be 'un-factory like' in appearance, and the writer worked in one in 1939 which actually had a half-timbered Elizabethan-style frontage! The Warwick SF was named *Avon House Works* (after the large house in the garden of which it was built) is not particularly "un-factory like" in appearance and shows no signs of ever being camouflaged, which suggests that by 1943/44 the Government considered the likelihood of serious bombing in the Midlands to have passed.

The shell of the factory was built at a cost of £16,819, with an

extra £1,428 for the air raid shelters and gas de-contamination facilities. It stands on a 6-feet deep foundation of granulated material and concrete, its walls are double-skin brick-built with vertical steel reinforcing rods between the skins, and an in-fill of concrete. The curved roof is of 18-inch thick concrete, and internally there is one reinforced-concrete truss, and one frame truss with brick in-fill. The main production area occupied 4,650 sq. ft. (later extended by a further 560 sq. ft.) while the office block provided 1,000 sq. ft. and the cloakrooms, boiler house etc. occupied 600 sq. ft. In addition to its bomb- and blast-resistant features, the aim was to provide a building with sufficient thermal stability and insulation against external vibration (from nearby road traffic, for example) to allow very high precision aircraft instruments to be made, assembled and tested.

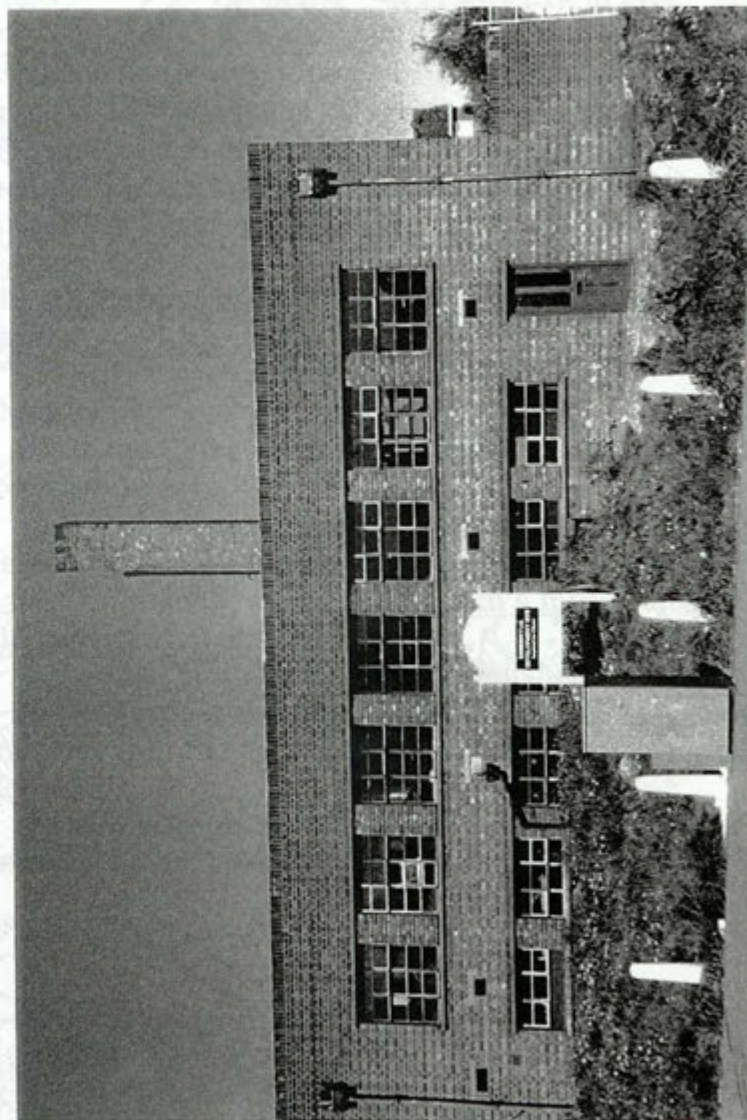
The Ministry of Aircraft Production allocated the management of the new factory to Joseph Lucas Ltd. of Birmingham, who put Smiths Instruments into occupancy. Smiths made high-precision aircraft instruments such as altimeters, turn and bank indicators, gyros, airspeed indicators, and so on. Production of such equipment continued until the end of the war approached when, for the last few months of hostilities, the factory was turned over to the manufacture of parachutes.

In peace time, its first occupants were the US-based Unbrako Screw Company, who initially rented the factory and then subsequently bought it from the British Government. Unbrako spent some £4,500 on modifications to the air-raid shelter and de-contamination areas, plus some additional outbuildings, and used the factory until 1956, when it was bought by Peter Lloyd to begin a new lease of life as a manufactory for gas appliances of various types.

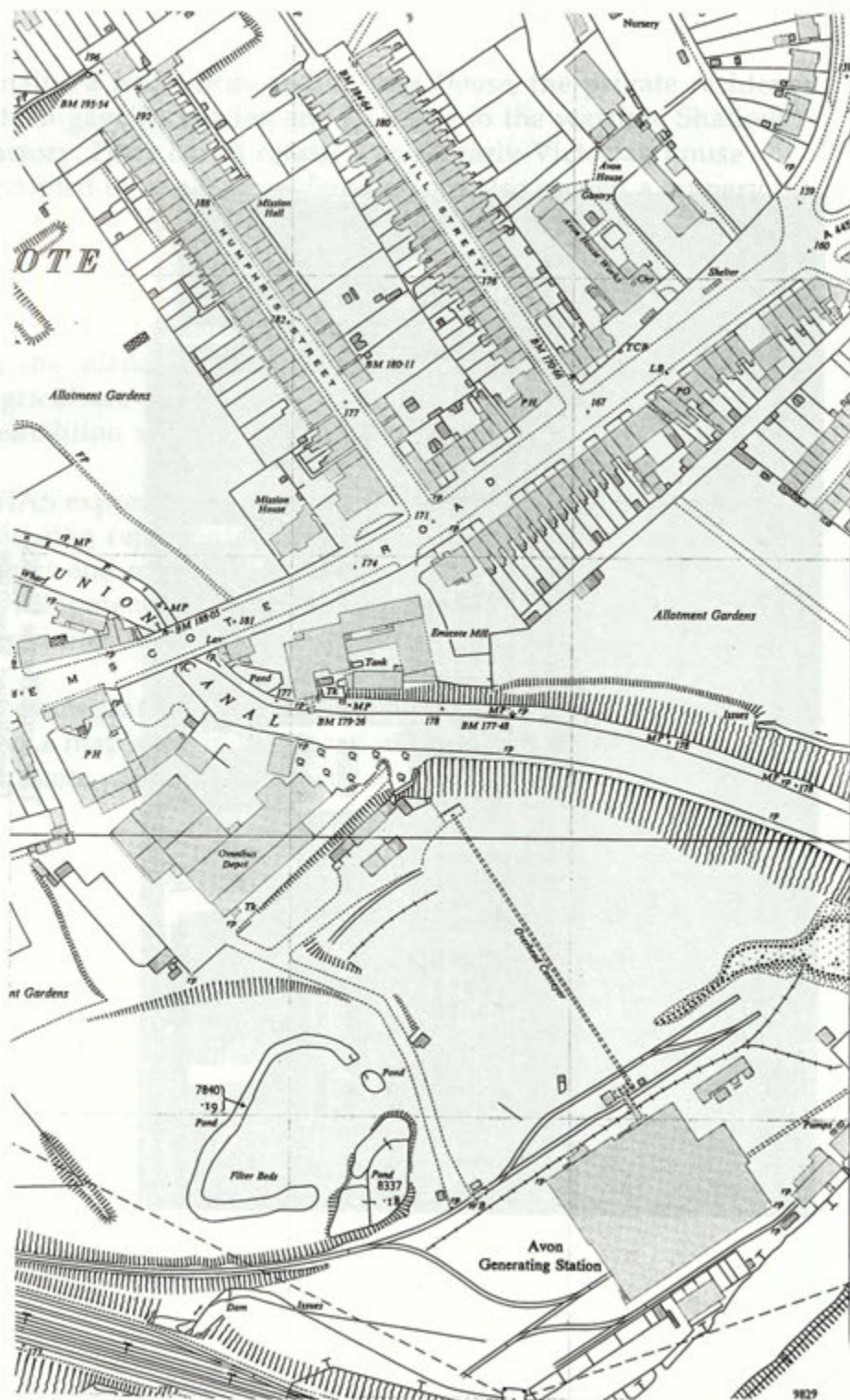
Finally, a few words about *Avon House*, the private residence which gave its garden and its name to the wartime Shadow Factory. Peter Lloyd recalls it as an early-Victorian house occupied by the Harvey family, who also owned a tannery in West Street, Warwick. *Avon House* had two storeys, with six rooms on the ground floor and a further six on the first floor. There was also extensive cellarage. In later years, the house was used commercially, firstly as a Valuation Office and then by the Inland Revenue. Later occupants were the Ministry of Agriculture and Fisheries, and the final tenants prior to demolition were the Ordnance Survey.

WIAS expresses its appreciation to Peter Lloyd both for allowing representatives of the Society to tour *Avon House Works* and to record its history and features prior to redevelopment, and for checking the facts in this article and providing additional data prior to publication.

A photograph of the *Avon House Works* is included opposite, and a map showing its location - together with other parts of Emscote - is included overleaf.



The Avon House Works
Demolished May 1998



Emscote - a changing scene

As reported in a previous edition, the small industrial area of Emscote has lost many of its landmarks in recent times. Avon House works is only the latest in this list. The character of this area will be changed significantly once the land owned by PowerGen is redeveloped as a supermarket.

The map opposite shows how the scene has changed in recent years ...

The loss of

- the Power Station and railway sidings, demolished some while ago.
- the Mission House ... later a social club for Brookes, demolished in ?1980s to make way for housing.
- Emscote Mill ... later Kench's mill ... later Fleur de Lys pie factory, demolished in 1996.
- the Tramway Depot, demolished in 1997
- some of the Emscote Wharf buildings, including the wall carrying the sign 'Emscote Old Wharf', demolished in 1997.
- the Avon House works, a wartime Shadow Factory, demolished in 1998.

ILLUSTRATED CATALOGUE
OF
CARTS, WAGONS, DRAYS, WATER VANS,
&c., &c., of all descriptions.

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WAGONS, CARTS, AGRICULTURAL IMPLEMENTS, &c., &c. ENGINES, IRONFOUNDRY, AND IRON STRUCTURE MANUFACTORY,
EAGLE WORKS, WARWICK. PACKMORE WORKS, WARWICK.

Postal Address, WM. GLOVER & SONS, WARWICK.

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ESTABLISHED 1830.

We have pleasure in presenting our revised catalogue of all kinds of vehicles used by Surveyors, Builders, Railway Companies, and for all agricultural purposes, with a collection of vehicles used for general trade purposes.

Our works are fitted with the most modern and improved machinery, so that we are able to make every part with the greatest accuracy and can produce the very best articles at the lowest possible price.

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The increase in our business has been great, and our manufactures have been before the public some sixty years; we have received numerous testimonials as to their efficiency, lightness of draught and durability.

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In addition to our Cart and Wagon manufactory, Eagle Works, Warwick, we have taken the Packmore Works, Warwick, where we carry on the business of Engineers and Millwrights and manufacturers of Iron Roofs, Bridges, Girders and every description of Iron Buildings, and we shall be happy to supply full descriptive catalogues on application.

Grateful for past favours and soliciting a continuance of the liberal support we have so long been favoured with,

We remain,

Your Obedient Servants,

WM. GLOVER & SONS.

P.S.—We have a large collection of drawings of special vehicles not shown in this catalogue.

Gazetteer

No edition would be complete without some mention of the Gazetteer project. Some progress has been made on this, and there will be the first meeting of the Gazetteer Group on Thursday July 9th at 7.30 p.m. in the Sixth Form Centre, Warwick School. This is the usual second Thursday in the month. The meeting will simply be a 'brainstorming' session, trying to establish lists of sites from members' knowledge and records. These will be entered on a database in due course. Part of the evening will be made up of the showing of slides of the various IA sites of Warwickshire. All members are welcome - even if you feel that you do not have a contribution to make to this listing process. We feel sure that there will be plenty of interest throughout the evening.

Wm. Glover & Sons

Martin Green is very keen to gather information concerning the products manufactured by this firm. Evidence of their work can be found all over the county, and Martin is keen to prepare a list of what may remain. Peter Chater has already found several items. Please pass on any information to Martin Green at the monthly meetings - or by post.

Research by members

The noble efforts of Roger Cragg continue, with his focus on the bridges of Warwickshire. Roger has also worked on other aspects of industrial archaeology in the county, and an IRIS report on Charlecote Mill is included overleaf. This is followed by an abbreviated version of John Selby's work on the Tunnel Brickworks, and the latest work of John Brace - 'History Underfoot in Stratford-upon-Avon' - which has been published as WIAS Leaflet Number 4 for a wider audience.

AIA - Index Record for Industrial Sites

Box 1

SITE NAME
CHARLECOTE MILL

Address: Between Hampton Lucy
and Charlecote, adjacent R. Avon

District/Borough: Stratford on Avon

Parish/Township: Charlecote

Box 2

IRIS NUMBER
WA / WIAS / RC18

Part of:

Associated with:

SMR no:

NMR no:

Box 3

NGR1 [SP][2590][5722] NGR2 [] [] []

Box 4

Class: Corn/C18

Site Term: Corn Mill/C18

Site Significance: L / (R) N / I < .1700 [1750.1800.1850.1900.1950.]

A working corn mill with two undershot waterwheels. An important site.

At Risk? (In use) / Partly in use / Disused The mill is in full use for its original purpose.

Fixtures? (Y) N / U

Machinery? (Y) N / U

Site Details: A water mill with two undershot wheels fed by the River Avon. Red brick, three storey building with timber tiled and slated roof. The West wheel has 42 paddles and is about 18 ft diameter, the East wheel has 54 paddles and is also about 18 ft diameter. The West wheel drives two pairs of stones and the East wheel drives ancillary machinery. Millstones are about 4 ft diameter, lower stone fixed and upper stone rotating at about 100 rpm. Grain storage on second floor with roof area used for access to grain hoppers. Main building is about 50 ft long by 20 ft wide with a (later) extension at the rear to form a T-shaped building. Wheels are cast iron with timber paddles.

PRIME MOTIVE POWER

Muscle _____

Wind _____

Water ☒

Hydraulic _____

Steam _____

Pneumatic _____

Electric _____

Combustion _____

None _____

SITE COMPONENTS

No	Component Term	Period	Form	Importance	Status
1	Corn Mill	C18 to present	Roofed building	(H) M/L	L/S/G/N
				H/M/L	L/S/G/N
				H/M/L	L/S/G/N
				H/M/L	L/S/G/N
				H/M/L	L/S/G/N
				H/M/L	L/S/G/N
				H/M/L	L/S/G/N
				H/M/L	L/S/G/N
				H/M/L	L/S/G/N
				H/M/L	L/S/G/N

AIA - Index Record for Industrial Sites (page 2)

Box 5

IRIS NUMBER
WA / WIAS / RC18

Box 6

Other Status: _____

Site History: The present Mill was probably built in the eighteenth century but it is on the site of earlier mills. Two mills at Hampton Lucy are recorded as belonging to the Manor in the Domesday Book (1086). The Mill was used until the 1950s, the last Millers being Newberry & Son from 1936. The present Miller, John Bedington has leased the Mill since 1978. The West wheel was restored by the B.B.C. for use in the film of "The Mill on the Floss" and subsequent restoration of the West wheel stones, the East wheel, the sack hoist and the building generally have been carried out. The name of Ball & Horton, Millwrights is cast on the W. wheel.

ASSOCIATED PERSONS/COMPANIES

Name **Details**

Ball & Horton, Millwrights Makers of the West wheel.

Site Recording: Drawings & Photographs(1,2)

- Sources:** 1. Drawings of the Mill by Wilfred Foreman (1984)
2. Institution of Civil Engineers - P.H.E.W. - HEW No. 1978 - Record Form
3. _____
4. _____
5. _____

Date of Last Visit: June 1994 Reporter: Roger Cragg

Compiler: Martin Green

Date: April 1998

Society: Warwickshire Industrial Archaeology Society

Box 7

Continuation Box: _____

HISTORY UNDERFOOT in 'STRATFORD - UPON - AVON'

Public Utilities have made great use of cast iron gratings, covers and manholes, so that today the streets of our towns and villages are paved with history. You don't need special skills to read this history for many state their origin whilst others can be identified by the similarity of pattern and shape with others. Although such items of street furniture were installed in the early 19th. century it is unlikely that you would find easily identifiable items from such an early date but in our older towns and cities it is usually possible to find a continuous succession of manholes etc. from the late 19th. century to the present time.

The most useful way of identifying, and thus dating, these castings is by reading the legend for most will identify either the manufacturer or the undertaking that provided the service. There are, however, several other aids to dating but these must all must be used with caution. The first is the cumulative effect of decades of passing traffic gradually wearing the pattern so that in extreme cases little or nothing is left. This is however not an infallible guide for a well worn manhole in a heavily trafficked road may be newer than a well preserved item in a nearby side street. Another clue is the quality of the casting, and particularly the regularity and sharpness of the pattern and lettering, for this certainly improved in the 20th. century. A final caution - manholes are mobile - thus examples of Leamington Corporation Manholes can be found in Warwick and Stratford upon Avon has at least one North Thames Gas Board gas valve cover plate.

THE STRATFORD GAS COMPANY

The Stratford Gas Company (SGC) opened its first works in 1834. These were in Chapel Lane on a site which is now occupied by the Union Club. These works caused much nuisance to the town and under the threat of legal action the works were moved to a new site close by 'One Elm Bridge' in 1837. In 1880 the town successfully opposed the renewal of the gas company's licence and all the assets were transferred to the 'The Stratford Corporation Gas Department' (SCGD). Later the works were enlarged and came to be known as 'Timothy's Bridge Gas Works' whilst the area supplied from Stratford was also much enlarged by absorption of the previously independent gas undertaking in Snitterfield. The Stratford Corporation Gas Department continued to supply gas to Stratford until the gas industry was nationalised in 1949. Under public ownership Stratford was at first part of the West Midlands Gas Board (WMGB), then of West Midlands Gas (WMI) and finally of British Gas before being returned to private ownership in 1988.

The Timothy Bridge Gas Works, which had been much modified and extended since 1837, was closed in 1962/3 when gas was brought in from Leamington Spa. Excepting a few minor buildings and the gasholders at the Timothy Bridge Site nothing remains of either of Stratford's two 19C Gas Works and the only visible evidence of the original gas company, or the corporation gas department, to be seen about the town are some gas valve cover plates. Many of these are now so worn that they can only be identified by their similarity to others which have retained their original identification. Two types have been found as illustrated in figures 1 and 2. The first, showing the letters 'S G C', was almost certainly the property of the Stratford Gas Company and thus dates not later than 1880. The second, showing the

Six Examples of Service Cover Plates in 'Stratford'



Fig. 1 0 Inches 3

The Stratford Gas Co.
Ex. Old Town Croft
(Opposite College Street)



Fig. 2 0 Inches 3

The Stratford Corporation Gas Dept.
Ex. No. 15, Warwick Road.

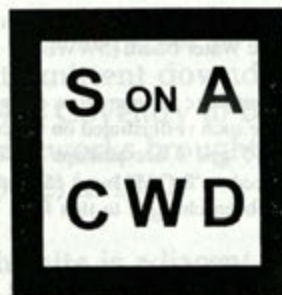


Fig. 3 0 Inches 2

The Corporation Water Dept.
Ex. Church House Hotel, Warwick Road.



Fig. 4 0 Inches 2

Stratford Corporation Water.
Ex. Opp. White Swan Hotel, Wood Street.

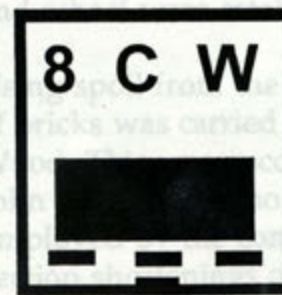


Fig. 5 0 Inches 3

Stratford Corporation Water
Mistakenly Reading 8CW.
Ex. Lloyds Bank, Bridge Street.

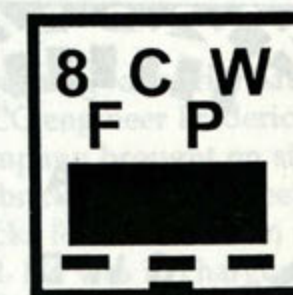


Fig. 6 0 Inches 3

A Stratford Corporation Fire Plug Mistakenly
Reading 8CW.
Ex. Opp. White Swan Hotel, Wood Street.

letters 'S C G D', identifies the owner as The Stratford Corporation Gas Department and must therefore have been produced some time between 1880 and 1949.

Lastly, although not properly represented in the illustrations, there are some interesting details to be seen in the castings. In figure 1 the letter 'C' has been misplaced and appears somewhat fallen and twisted whilst in the other the 'T' in 'D' is in a different style, or font, to the other letters.

After nationalisation Stratford's cover plates become very uninteresting for they read simply GAS

G
or GAS however, for the first time, vertical service indicator plates were fixed close to important gas

G
valves. These, black on white plates, variously read WMGB or WMG.

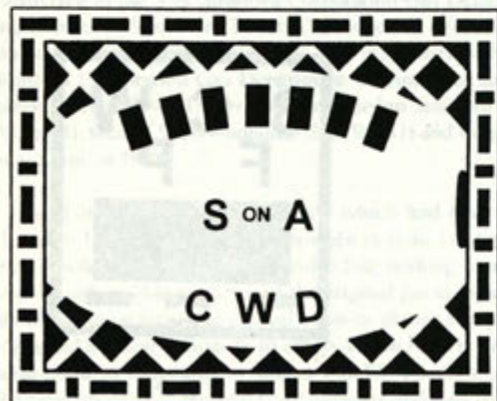
THE WATER SUPPLY

It is unclear when water was first piped to Stratford but the modern system originated in the early 1880's when a supply was brought from about Snitterfield to the town. Subsequently the town had two distinct water supplies firstly that originating from Snitterfield which was used for domestic purposes and secondly Raw Water, taken from the canal, and used for street watering and fire fighting.

As the Sanitary Authority the Corporation provided the town with water until 1963 when the undertaking was incorporated into the newly formed South Warwickshire Water Board (SWWB).

Unfortunately no evidence for the Raw Water supply has been found but there are numerous examples of Stratford Corporation valve, and hydrant, cover plates to be seen. One such is illustrated on the cover sheet and four others are shown in figures 3 to 6. Of these figures 5 and 6 are perhaps the most interesting for not only have the towns initials been mistakenly reproduced as '8 C W' but it can also be seen the case with which a standard design of 'Valve Cover Plate' has been changed to that for a 'Fire Plug'.

Since 1963 the water supply has been provided in turn by The South Warwickshire Water Board, The Severn Trent Water Authority and Severn Trent Water each of whom have left their own distinctive cover plates about the town.



0 2
Inches

A 'Corporation Water Department' Valve Cover Plate In Meer Street

John Brace

March 1998.

'Tunnel Brickworks', Fenny Compton

One of the main features of our display material is the work carried out by John Selby on the 'Tunnel Brickworks' Brick Kiln, Fenny Compton.. As this information is freely available to visitors to our display, we felt that members should have the opportunity of a copy of John's introduction.

He continues to carry out his original research on this project, hopefully with a grander publication in mind for some stage in the future.

A rare survivor of a once common local industry, this derelict intermittent downdraught kiln stands within 50 metres of the A423 Coventry to Banbury road. It is the remaining part of a brickworks brought into use by the Oxford Canal Company (OCC) in 1840.

The site is adjacent to the former 1188 yard Fenny Compton Tunnel completed in 1776. This proved to be a bottleneck to canal traffic, so between 1838 and 1840 the OCC partially opened up the tunnel by shortening both ends and making a basin in the middle. This was where the original brick kiln and wharf were established.

Using spoil from the tunnel works, a 'burning' of a trial batch of bricks was carried out by the then OCC engineer Frederick Wood. This was successful, and the company brought on site John Whitmore who as a journeyman brickmaker had been employed by the company to make bricks for the northern section shortenings of the Oxford Canal. He was in charge until 1864.

Under a new engineer Richard Gillett the tunnel was finally opened out completely between 1866 and 1869. This provided an increased source of spoil for the continuation of brickmaking. The bricks and tiles produced were used by the OCC and sold to builders along the line of the canal.

In 1865 brickmaker William Langford took over and was in charge until the early 1900s, and one of his sons Arthur carried on until the works closed during the First World War. The last load of 14,350 bricks was probably sent to Lilbourne Aerodrome (near Rugby) in April 1917.

The site has now lain derelict for more years than it operated. Its location on canal company property together with the lack of a large clay pit suitable for landfill purposes has probably ensured the kiln's survival, although the chimneys disappeared at an unknown date. Some clearance of vegetation was done during the creation of the Oxford Canal walk, of which the kiln is a feature. This has probably secured the future of the structure although the brickwork is in need of some consolidation to prevent further deterioration.

With thanks to John Selby for original research.

August 1997

An Emerging Japanese Cult

Having removed much of the UK's capacity in manufacturing, there still remain some aspects of UK industry that hold a fascination for the Japanese - and there is little chance of any competition in the future. Japan has very few brick-built houses because of the dangers from earthquakes, but this does not stop them from admiring this most attractive building material.

Never to do anything by halves, they have established a world brick museum at Maizuru, where several examples of UK bricks are held in high esteem. Over 10,000 people a month have visited the museum to see 16 bricks from Scotland yard, Covent garden, the Royal Albert Hall, St. Pancras Station and 221B Baker Street. The bricks, which usually become available during restoration work, are displayed in glass cabinets. The Museum is housed in a steel-framed brick building, built in the Meiji period (1868 - 1912) as a torpedo storage for the navy.

The bricks reach Japan either by post or are carried by visiting delegations. This conjures up images of the smartly dressed, inscrutable Japanese staggering in to Heathrow Airport with hand luggage well over the acceptable weight limit! For any jet-set travellers in the Society, the Museum is open from 9 a.m. to 5 p.m., but closed on Mondays.



Warwickshire Industrial Archaeology Society

PROGRAMME 1998/1999

Meetings of the Society are held on the second Thursday of each month in the Sixth Form Centre at Warwick School, Myton Road, Warwick, starting at 7.30 p.m. A map of how to find the Sixth Form Centre at Warwick School is available from the Secretary. Visitors should park in the Junior School/Sports Hall car park. The Sixth Form Centre is adjacent to this car park.

1998

Thursday 11th June
Annual General Meeting and Members' Evening.

Thursday 9th. July
Gazetteer Group Meeting
An attempt to make a positive start to the task of listing IA sites in Warwickshire. All members welcome.

No meeting in August

Thursday 10th. September
John Burge, Chairman of Friends of Ferguson Heritage:
'The History of the Ferguson Tractor'

Thursday 8th. October
Steve Bagley, Curator of the Coventry Motor Museum:
'The History of Car Making in Coventry'

Thursday 12th. November
Adrian Shooter of Chiltern Railways: 'The Chiltern Railway System'

Thursday 10th. December
To be announced

1999

Thursday 14th January
Glynne Bowsher: 'The Thrust Project'

Thursday 11th February
Roger Butler of British Waterways. 'Aspects of the Canal System'

Thursday 11th March
David Fry: 'Coventry's Industrial Heritage as seen through old postcards'

Thursday 8th April
Mr. Duston of the Fire Service Preservation Group
'Fire Fighting through the Ages'

Thursday 13th May
To be announced

Thursday 10th June
Annual General Meeting and Members' Evening

The majority of the time at these meetings is occupied by our speaker, followed by refreshments, and a subsequent period for questions and follow-up material. The final part of the meeting is then usually taken up with a brief contribution from one of our members. Do not be afraid to volunteer!

Occasional additional events will also take place during the year, and members will be duly notified of these.

Warwickshire's First Telephone Cable Fails

by John W. Brace

By 1852 both Warwick and Leamington Spa had access to a rapidly expanding telegraph network that would very soon reach most of the Kingdom - or at least that part of the Kingdom within easy reach of a railway station. This expansion was not without technical difficulties but, unlike the telephones that followed later, direct telegraphic communication over distances of several hundred miles was achieved with little difficulty.

Telephones were first introduced into the United Kingdom in 1877 and very soon local exchanges were being opened in many towns. The first exchanges served only a small area but soon they were being interconnected so that calls could be made to subscribers on other, nearby, exchanges. Efforts were also made to connect distant exchanges by so-called trunk lines, but the quality of these connections was initially very poor and it was not until many technical problems had been overcome that long distance telephony became practical. The most obvious cause of poor communication over trunk lines was the resistance of the long wires but it was soon found that simply changing from the early iron wires to copper or increasing the diameter of the wires, although beneficial, was not a complete solution. Not until the problems of electrical interference and the strange property of telephone lines to distort signals¹ had been overcome would long distance telephony become reality.

¹ A third property, that of the outgoing signal being reflected back to the caller, was either no great problem or was unrecognised for no mention of it is made of this in relevant texts.

Closely following telegraph practice, the first telephone lines were almost all overhead, single wire, circuits using an earth return. However the overhead wire being a good aerial and the earth carrying all sorts of electrical currents meant that this arrangement picked up a good deal of background noise. The greater the distance the more noise, and this limited the distance over which telephones could work. Fortunately it was soon found that by using a metallic return, two wire circuit, this problem was greatly reduced and two wire trunk circuits quickly became the norm although local circuits remained largely unimproved for many years.

Another type of electrical interference arose when two, or several, telephone or telegraph circuits ran close to each other. By far the greatest interference was generated by the telegraph traffic but interference from other telephone circuits was particularly unfortunate for 'cross talk' caused other conversation(s) to be overheard. Again the adoption of metallic return, two wire circuits, was beneficial but not a complete solution. Interference from the telegraphs could be minimised by physical separation or the use of filters² but it is not known to what extent either was adopted in the nineteenth century. The solution to the problem of cross talk between telephone circuits running together required that the conductors should frequently change their relative positions so that for some part of the time the interference was additive whilst at others subtractive. How frequently the conductors were crossed over in overhead lines is not known but in cables the solution required that firstly the pairs were twisted together and then these pairs were further twisted with other circuits in configurations that became exceedingly complex.

² By the use of filters it was found possible to simultaneously transmit telegraph and telephone traffic over the same wire.

All of the above remedies served to minimise electrical interference on telephone circuits but none addressed the problem of distortion. Distortion arises from an imbalance between the electrical properties of inductance and capacitance in the circuit. All circuits have this problem but it is most acute in cables which have less inductance and more capacitance than overhead lines. In both loading coils, inductors, were used to artificially increase the inductance of the lines and in cables the introduction of dry paper insulation reduced the capacitance to equally beneficial effect.

*An advertisement from the
Leamington Spa Courier of 1st. July 1893*

THE NATIONAL TELEPHONE COMPANY LIMITED

A telephone exchange and call offices have been opened in Regent Street, Leamington, and trunk line communication is now established with Birmingham, Coventry and most of the principal towns in England.

Rates and particulars can be obtained from:

Mr. P.F.Currall, Local Manager, 18 Smithfield Street, Coventry

William L. Gaine,
Oxford Court,
London EC
(General Manager)

By 1886 the National Telephone Company had opened several telephone exchanges in Birmingham and by 1893 the network had been extended to include Warwick, Leamington Spa and Coventry. In 1888 work started on a double circuit overhead line between Birmingham and London. This would have

copper conductors weighing 150 lb. per mile and curiously appears to have been routed via Stourbridge. Opened in January 1891, this line apparently gave satisfactory service not only between Birmingham and London but also for more distant traffic (e.g. in 1894 telephone traffic between Bristol and London was routed through Birmingham). In 1899 a trunk line was also opened between Birmingham and Coventry but it is not clear whether this was part of the Birmingham to London trunk line or not.

Overhead lines were easily damaged - so much so that a severe storm could leave much of the country without either telegraphs or telephones. Thus after taking responsibility for the trunk telephone service the Post Office resolved to place all new circuits underground. So for its first, flagship project, the Post Office undertook to lay an underground cable from Birmingham to London. Work started in 1897 on a route that after passing close to Lapworth, continued via Warwick and Leamington Spa to Southam and Weedon. The cable was a 38 pair 'low capacitance' paper insulated and lead sheathed cable manufactured by the British Insulated Wire Company. This was drawn into three inch cast iron pipes laid at a depth of 2 ft. under footways and 2 ft. 6 ins. under roads. The cable was brought into pillars every five miles for the dual purpose of allowing sections of the cable to be tested and for forcing air into the cable to dry the insulation.

Completed in 1899 this cable was not to be successful - indeed it was almost a complete failure for it never³ proved possible to carry telephone traffic between London and Birmingham.

³ In 1930 the cable was reconfigured into nineteen four wire circuits which in combination with valve amplifiers allowed the cable to take telephone traffic for the first time.

The exact reason for the failure is unclear for it was sufficiently well constructed to be used as a telegraph cable and sections dug up near Lapworth in 1976 were described as being in excellent condition. Had the problem been excessive capacitance it would have been expected that the addition of loading coils would have resolved the problem but apparently this was tried without success. Another possibility is that the problems of cross talk had not been solved for the detailed descriptions of the cable make no reference to twisting of the conductors.

It was not until about 1908 that the first successful telephone cable between Birmingham and London was opened. The construction of this cable varied along the route but the main circuits were a mixture of 200 lb. and 150 lb. per mile copper conductors.

Unfortunately it appears unlikely that there is any connection between the 1899 cable and the cable joint markers found about the towns of Warwick and Leamington (reported in WIAS leaflet No.1), for no reference is made to them in the detailed reports of the work. The only visible evidence for this cable would appear to have been the pillars erected every 5 miles for testing and for forcing air into the cable. Sadly, none have been found but I would be very pleased to hear of any that may be known to readers of this article.

Sources:

1. Kieve, J.L., The Electric Telegraph (1993)
2. Tuping R.E., History of the Birmingham Telegraph Area
3. Williams, T., A History of Technology Vol. VII (1978)
4. The Leamington Spa Courier 1.7.1893; 26.1.1899
5. Baldwin, A History of the Telephone in the UK (1938)
6. A Victoria County History of Warwickshire Vol. VIII

The Model Village, Long Itchington, Warwickshire

by
Lyndon F. Cave

Early in 1912 Mr Lister Kaye asked Charles Armstrong, a Warwick architect, to prepare layout plans for a Model Village to provide housing for some of the workmen employed at the Southam Cement Works, then owned by Messrs Kaye and Co. Some records relating to the village survive, although these do not include the original layout drawings, and the earliest letter is one sent to Mr Kaye on the 12th March 1912 in which the architect outlined his first proposals for the village. The site, which was a rather odd shaped land purchased by Mr Kaye, was to be levelled for the erection of eighty-five cottages or houses, some with a plot of five hundred square yards with a frontage of thirty-five feet; a fairly large plot by present day standards. The first houses had earth closets in the rear garden and the larger properties also had a pigsty; all of these have now gone. The architect also suggested building a village hall, with a shop attached, on the site originally reserved for houses nos. 79 and 89, but his proposal was not proceeded with. Mr Armstrong also mentioned that: "the question of the need for allotments and of a playground will require attention. The site generally with its adjacent railway station, main road and villages, and also its altitude is very suited for this class of model village" although he also pointed out that the peculiar shape of the land had made it difficult to produce a really satisfactory layout for the cottages.

Designs were prepared for a simple and economic standard block of two houses planned "without cramping the sizes of

the rooms in which the kitchen or ground floor could be roomy, with three good square shaped bedrooms, each with a fireplace, on the first floor". The architect stated that the dwellings could be built of rough concrete blocks, with a tiled roof, having green painted woodwork and brown inside and that the buildings would not look unsightly. The earliest groups of houses also had some "mock" timber framing at the top of the gables on the front elevation; a typical feature of houses built during that period and this enabled the earlier houses to be clearly identified. The roofs could be slightly altered on different blocks to give variety to the whole village with the houses, being built of good materials, ready for occupation, at a cost of £170 each, exclusive of water supply, drainage, paths and fencing and the central main road, this being a costly item when metalled and properly sewered.

The Model Village was built in several stages, with the first contract for three blocks of two cottages each together with certain roads, paths and fencing being signed on the 17th October 1912 for a contract price of £1,509 6s 7d. This was followed by a second block of similar design with the contract being signed on 2nd January 1913, the price of which is not known, with a further contract being signed on April 18th 1913 for two blocks of four dwellings each for a total cost of £1,600. In all cases the contractor was the Building and Estates Development Co. Ltd. of Canada House, Baldwin Street, Bristol whose Directors were William Calway and H. Eden Brown. The external walls were built in 7 to 1 Portland Cement Concrete using Calway's Patent Cavity System, 9 inches thick to varying heights. The whole being finished externally with roughcast and rendered internally with plaster. The internal partition walls were 4.5 inches thick using solid cement concrete and built on Calway's Patent System and

plastered on both sides. The roofs were tiled with brown hand made sand-faced tiles made by G. F. Smith and Sons at their works in Old Milverton Lane, Leamington Spa, or grey Welsh slates.

The original building contract and specification stated that all the houses were to be constructed using the patent Calway System, designed by William Calway who designed the Building and Estates Development Co. to promote its use. Very little is known about the method of construction which was briefly described in a book published by Country Life, 20 Tavistock Street, London in 1926. It is interesting that this method of prefabrication using small movable shuttering units survived the Great War and was still available in 1926, showing it had been used for some years after the Model Village was started in 1912. Although the houses were constructed with a cavity the materials used must have been rather porous, being little more than breeze blocks mixed with a small amount of cement, and would need rendering outside to prevent the rain getting through the walls.

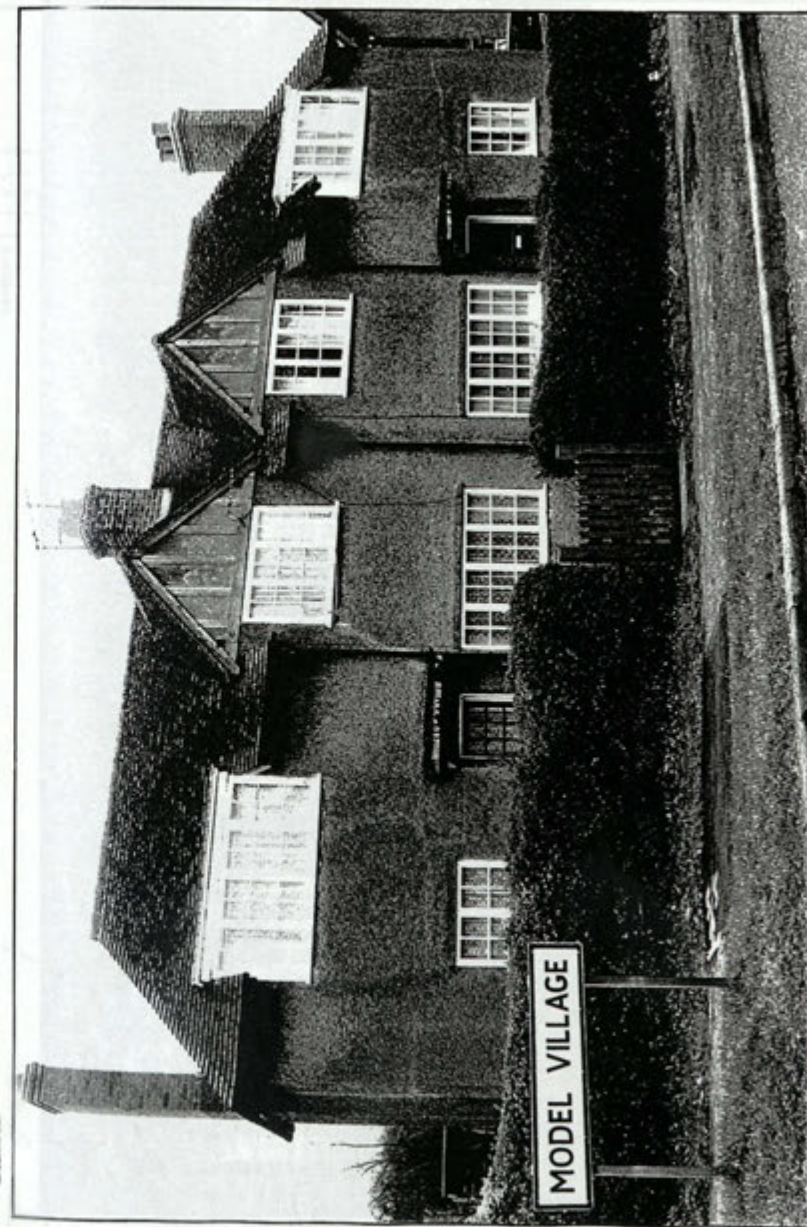
One of the early problems was a water supply for the new houses while at the same time there was not enough water available for the efficient manufacture of cement at the Southam Works. In July 1912 a new water supply was installed at the works, which also enabled a supply to be laid on for the proposed new village. The supply was installed by J. Mullins and Sons, Water Finders and Engineers, Railway Place, Bath and the specification for the work, dated 23rd July 1912, provides for an eight inch diameter artesian borehole which would supply 10,000 gallons per day to the works using a 3.5 b.h.p. Crossley Oil Engine in a new engine house built using concrete blocks supplied by the works.

Another difficulty was sewerage and the first dwellings had to be provided with earth closets erected in the gardens at the rear of the houses. A septic tank for sewage treatment was installed in April 1913 by the Septic Tank Co. Ltd. of Bristol at a cost of £360 19s 9d, with this work enabling further groups of houses to be built. Similar blocks were built at intervals until the start of the Great War followed by a few afterwards, with a total of 35 being constructed using the concrete block system. About the same number of houses were built of brick after the last war.

In 1934, the Rugby Portland Cement Company took over Kaye and Co. Ltd. of Southam, when it went into receivership and thus acquired the Model Village, having already built some houses for its own workers which can still be seen in Stockton. The Rugby Cement Company started to sell off the houses in the Model village as they became vacant from 1984, and many of these privately owned dwellings being modernised, resulting in some of the original elevations being altered by the insertion of new types of windows and porches added to the front doors. This means that very few of the houses, which were built to provide good quality accommodation for people employed at the cement works, remain as originally designed and eventually the whole village will pass into private ownership.

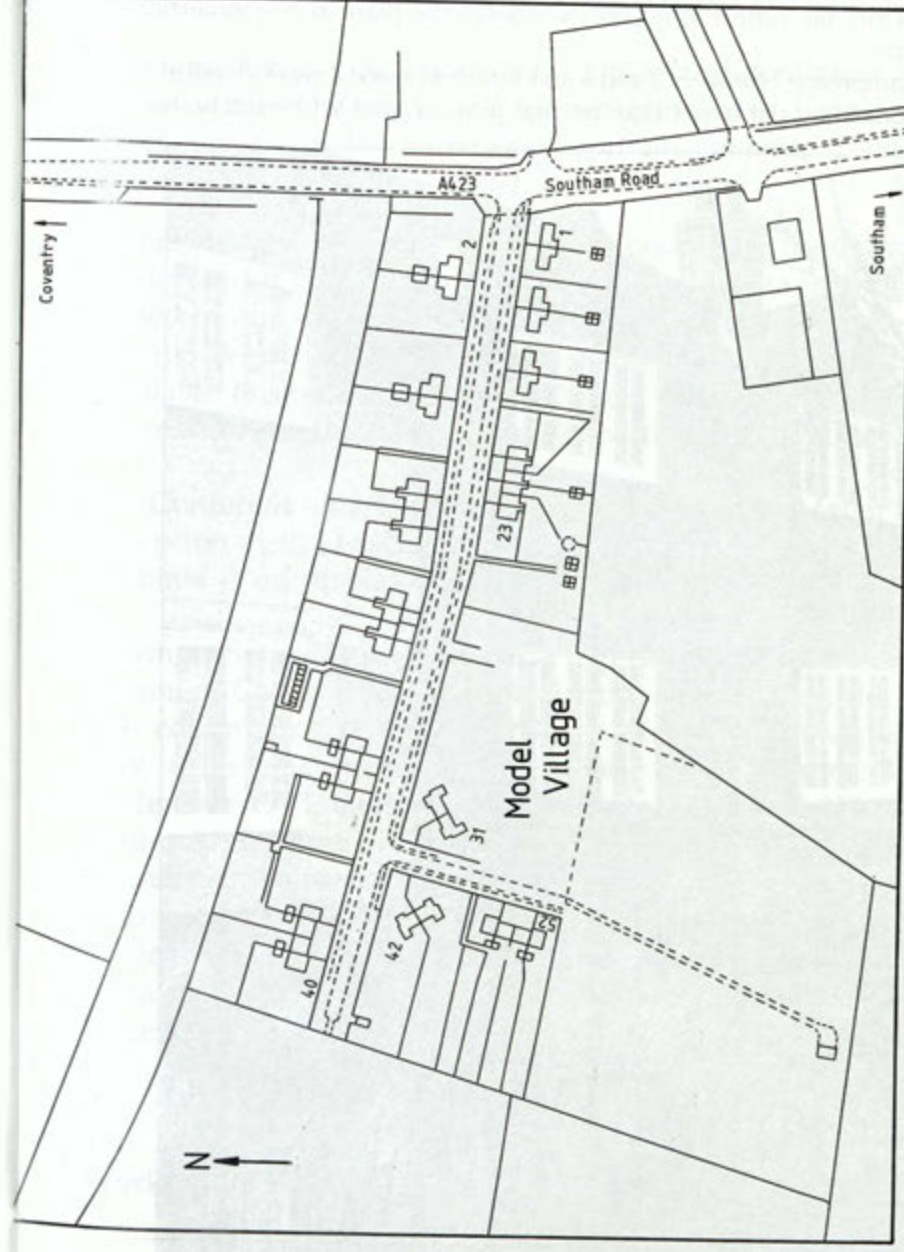
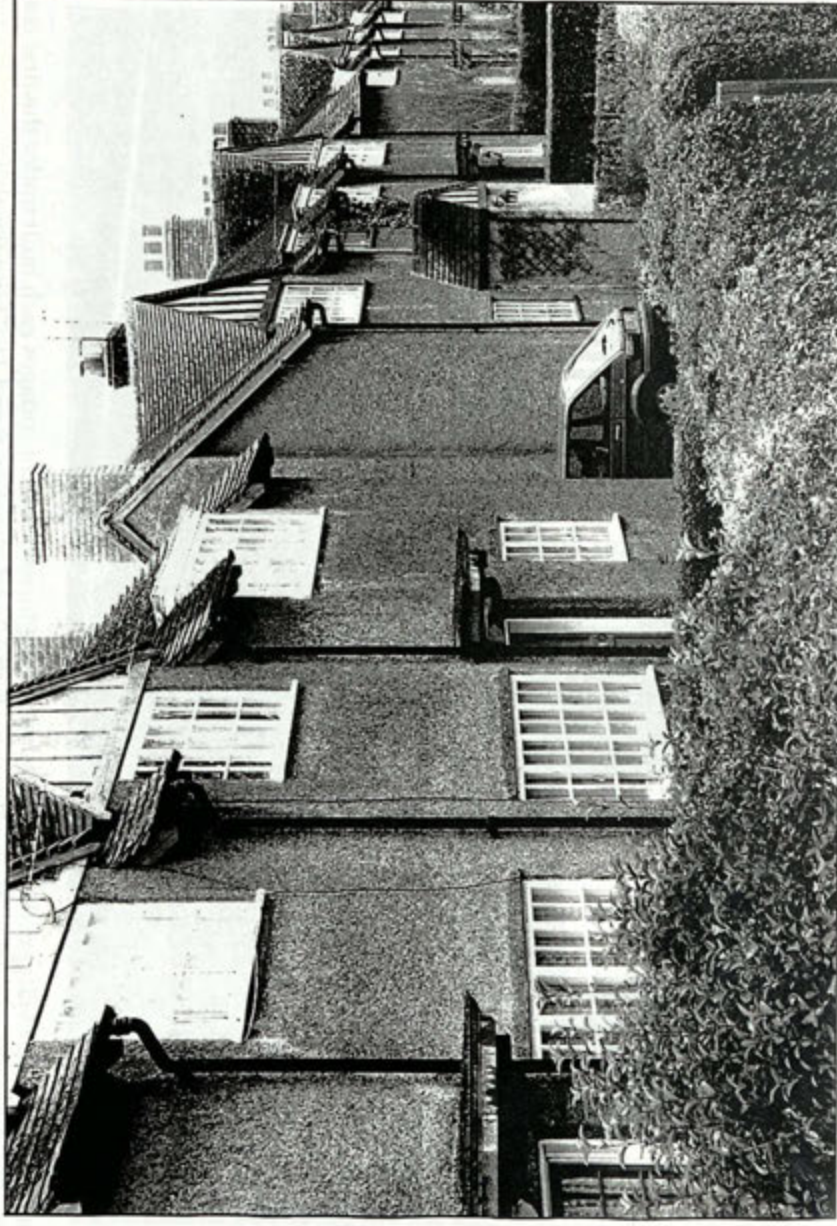
The Model Village is located at NGR 413641, opposite the entrance to Southam Cement Works off the A423 to the south of Long Itchington. The author would like to emphasise that the houses of the Model Village are private residences and this privacy should be acknowledged at all times.

The photographs on the following pages were taken by Mark Abbott, and remain his copyright.



Numbers 1 and 3 Model Village. Believed to be one of the three blocks of cottages each built under the first contract of the 17th. October 1912, the others being Numbers 5 and 7 and Numbers 9 and 11. These are also two of the very few houses built using the patent Calway System that retain their original appearance. Only the chimney stacks have been changed. they too may have been of concrete, later replaced by brick as the sulphur in the smoke attacked and weakened the concrete. Many of the brick stacks have been rebuilt in recent years. Note the detailed cantilevered concrete porches, the lines of which are echoed in the mouldings over the uppermost storey windows. Front doors originally had multiple glass panes as fitted to Number 1.

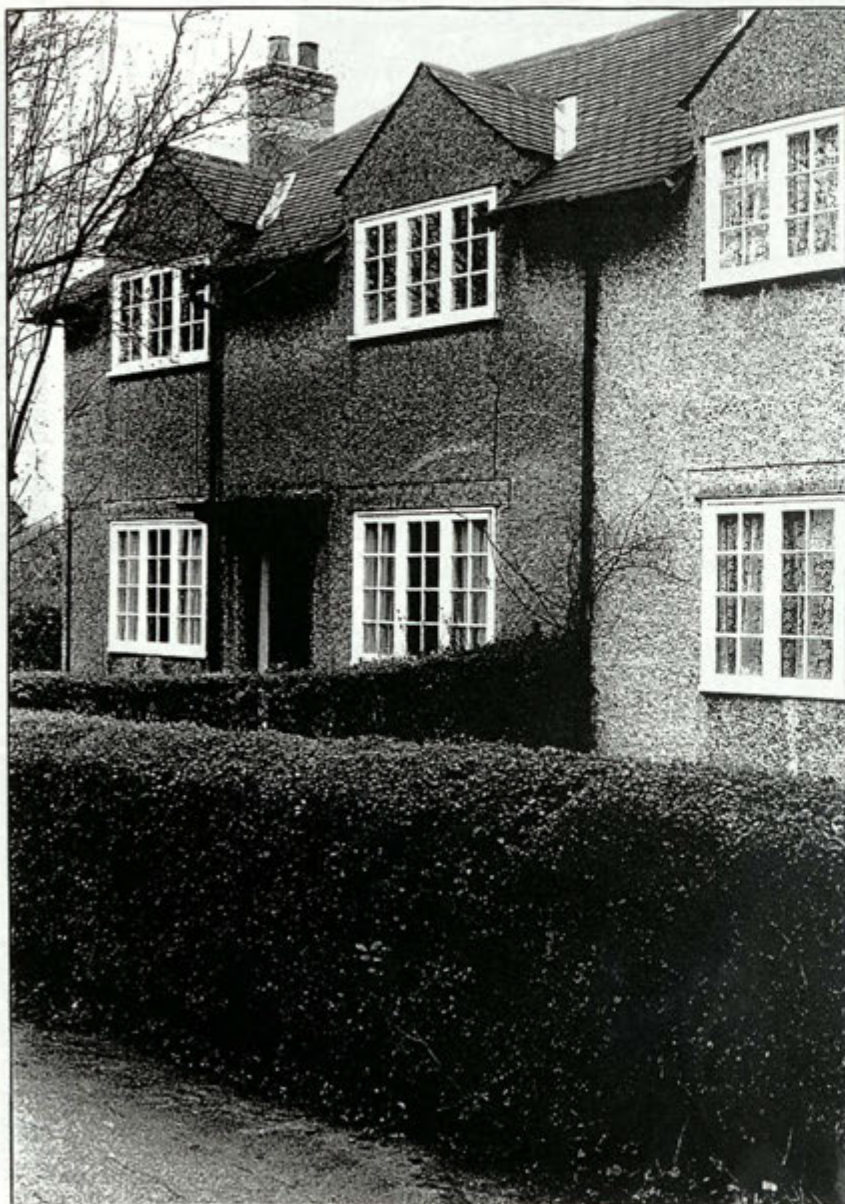
Numbers 1 to 11 Model Village. All these houses remain largely as built externally except for the porch of Number 5, which does not look out of place, and the double-glazed units fitted to number 7. Although the blocks are essentially the same design there are detail differences that give individuality. Numbers 1 and 3 have the small gable over the upper storey window in a different position from 5 and 7, while number 9 and 11 lack the timber detailing on the gable present on 1 to 7.



Plan of the Model Village, showing all the Calway System houses erected. Forty houses were built, about half the planned total, though it is difficult to see how the remaining houses could have been accommodated on the site. Around 1960, Rugby Cement added 24 conventional brick houses, eight semi-detached units and two terraces of four houses each. Four semi-detached units went between 23 and 29, so 29 and 31 were renumbered 41 and 43. The remainder were added sequentially from 52 and the (old) 31 with the terraced units on opposite sides of the road at the far south end of the site, originally an allotment area. The site now contains 64 houses.

Number 4, Model Village. Possibly one of the last houses on the site built using the Calway System. It has the slate roof used on the later houses and a rather austere appearance typical of housing built immediately after the Great War. Only the cantilevered porch relieves the plain and symmetrical front elevation.

The blocks comprising Numbers 2 and 4 and numbers 6 and 8 were identical and characterised by the larger than normal plots of land with each house.



ASSOCIATION FOR INDUSTRIAL ARCHAEOLOGY ANNUAL CONFERENCE 1997 NEWCASTLE UPON TYNE

John and Valerie Selby are our regular representatives at the AIA Annual Conference and we are grateful to them for continuing to fly the Society's flag at this important annual gathering. This is their report.

In this year's Conference, every foot taken was industrial history and it is difficult- or near impossible - to include all we visited in our week. There is a report by Alan Birt in IA News No. 103 Winter 1997, with photographs by Michael Harrison (*available to members on request*). So I will confine my impressions to the best, and perhaps the more unfamiliar.

The Conference started on Friday with the Lord Mayor's Reception at the Discovery Museum in the hall where MS Turbinia is on display.

Amongst Saturday's visits was a trip to Blyth 'A' Power Station at Cambois situated on the tidal estuary. At the time of first commissioning in 1958/60, the Metropolitan-Vickers 120 MW turbo generators were the largest in the country. By September 1995, Unit 1 achieved the target of 250,000 running hours. At the time of the visit, it was in the 'warm state' ready for start so we were clearly able to hear the Station Manager who was our guide, and he was duly proud of the fact that 'A' Station remains the oldest large-scale generating plant remaining in full commission in the world. Ironically, the larger 275 MW units in the later 'B' Station have been decommissioned (in 1991). Another recent addition has been the restoration for display in the former control room of a 1900 Parsons 125 KW 480 DC generator from the Spencer Steel Works - they had to knock a hole in the wall to get it in!

Sunday's visit aroused mixed feelings, for it was sad to see the state of the 1823 South Street purpose-built Locomotive Works of Robert Stephenson. A Trust has been formed after the acquisition of the shed and offices, with the intention of restoring it. It was such a shame to see a vital part of our industrial heritage - the location for the design and production of Locomotion No. 1 Rocket and Planet - becoming derelict.

Monday morning began with a walk through part of the two-mile damp and dark Victoria Tunnel built in 1840 to carry coal on a waggonway to Staithes on the Tyne. The surviving part with an entrance in Ouse Street was used as an air raid shelter. Roger Cragg would have been in 'seventh heaven' later with a walk to the Ouseburn bridges, a fine monument to transport on Tyneside. Standing on the sandstone eighteenth century bridge, you have above you, in a surprisingly quiet rural setting in the heart of the city, the railway viaduct first built in 1837-39 of timber, and then widened and rebuilt in iron in 1869. The Byker Road bridge of 1878 is contrasted by the slender curving line of the modern Metro bridge, designed by Ove Arup in the 1970s, snaking its way through the two nineteenth century bridges. This location is a must for anyone on a visit to Newcastle.

The afternoon visit was by the MF 'Pride of the Tyne' from the quayside to the mouth of the Tyne at North and South Shields with a commentary on the trip. Although the shipbuilding and engine works have mostly disappeared at Wallsend, Hebburn and Jarrow, it is still fascinating to see oil rigs and ships being fitted and repaired.

Tuesday took us into the Pennines, firstly to the immaculately English Heritage restored Derwentcote Steel Furnace, which

dates back to the 1720s, and used the cementation process. It was also a pleasant surprise for me to make a return visit to Nenthead and Killhope Lead Mining Centres, and to see the excellent work done on restoration, as well as to wade through the running water at Park Level Mine.

Wednesday was the turn of Wearside and a memorable visit was made to the Hartley Wood Glass Works, where sheet stained glass is manufactured using the traditional process. This involves the blowing of a bubble, cutting off the ends to form a cylinder, then flattening it to a sheet. This process has been perfected in Sunderland over the centuries to a 'melting in' of the colours for stained glass. The treat in the afternoon was the Ryhope Pumping Station in steam, and ending with a walk along the Wear gorge to Monkwearmouth station.

Thursday was our last day and it was spent at the sea-side, starting with a walk through Tyne Pedestrian and Cycle Tunnel completed in 1951, and predating the vehicle tunnel. It was at the time the longest continuous escalator in the world. Souter Point Lighthouse (now National Trust) was our next port of call. When opened in 1871, this was the first lighthouse in the world to have electricity as a source of light for the lantern. Besides other visits, we ended at Seaham Harbour which in its day was a major port for the shipment of coal. It is still used by small ships.

For us, the Conference was rounded off by a buffet supper as guests of the Bowes Railway at their Springwell site. As we left late in the evening, the first rain of the entire week began to fall, and we were able to reflect on a memorable Conference.

Seen and Heard

- Following Sir Frank Whittle's death in 1996, a pamphlet entitled **Whittle 1907 - 1996: Warwickshire's Genius of the Jet** has been written by **Paul Bolitho**. It is published by Warwickshire County Council, with sponsorship from GEC Alsthom. This provides an excellent introduction to Whittle's life and work, and is very generously priced at £1.95.

- **Coventry's industry laid bare:** In a rather unlikely combination, the latest publication from Albert Smith and David Fry - authors of the 'Coventry We Have Lost' - covers photographs of (perhaps rather too many) Lady Godiva processions, together with some fascinating photographs of various Coventry industries. These are certainly worth more than just a casual glance. The book is published by Simanda Press, Berkswell, price £4.95. David Fry will be our visiting speaker in March 1999, with 'Coventry's Industrial Heritage as seen through old postcards' as his theme.

- It may be difficult to justify the link between industrial archaeology and the long arm of the law, but members may be interested to know of the recent publication of a pictorial history of the Warwickshire Constabulary. **Policing Warwickshire** is the work of police inspector Graham Sutherland, aided by two retired officers, James Powell and Terence Gardner. Copies are available, priced £7.95 including post and packing from Graham Sutherland on 01926 410414, or from selected booksellers.

- Many members will remember the **Courtaulds building in Nuneaton, and its clock tower**. The clock from the building has been donated to the British Horological Institute Museum, Upton Hall, Newark. The Museum took over the Gillett and Johnston of Croydon movement, bell and clock dials. It is their intention to erect the clock mechanism on its original wooden stand, the weight lines to be configured to allow a 12-hour run. They were particularly interested in the Grimthorpe three-legged gravity escapement. This information was kindly given to the Chairman, Toby Cave by Jean Lapworth of Nuneaton, whose brother used to maintain the clock when it was in its original location.

- **Hodful of Warwickshire bricks.** The Society continues to exhibit at 'local gatherings', including the Town and Country Festival at Stoneleigh in August, and the 'Life and Times' Fair in Coventry in June. Amongst the display material, Mark Abbott's photographs are admired by all, whilst the sight of Martin Green staggering in with an overfull box of bricks causes amusement to many.

Should any members know of other events at which the Society might be represented, do let Mark Abbott know.

- **'Brown boots in Earlsdon'**, the excellent pamphlet written by Mary Montes on the rise and fall of the watchmaking community of Earlsdon has just been reprinted, with some minor revisions. It is highly recommended, price £3.50. We hope that Mary Montes will be the visiting speaker to one of our monthly meetings in the next eighteen months.

• **Pre-fabs finally make it.** Reference to the pre-fab houses in Wake Green Road, Moseley, Birmingham have been made in a past issue of Retort! It was of some interest, therefore, that these buildings should receive Listed Status, much to the pleasure of residents who have developed great affection for these houses over the years.

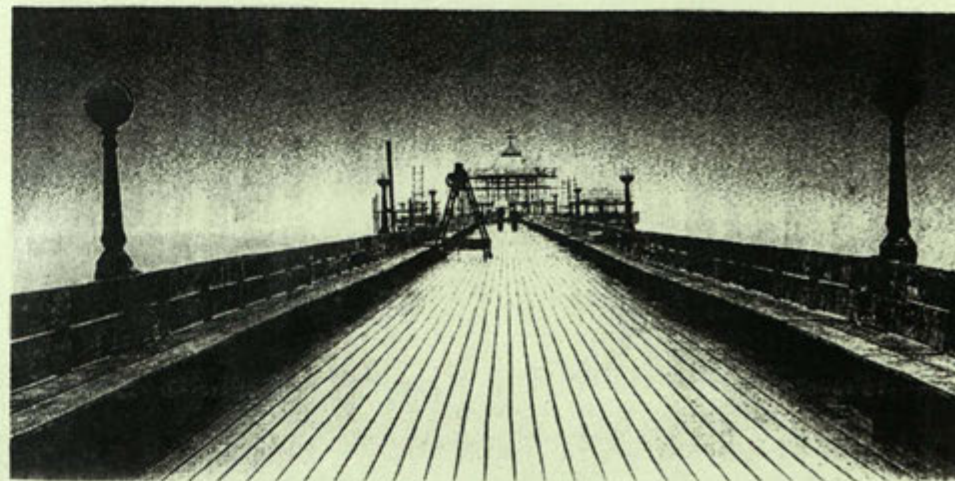
• **New gates at Hatton.** British Waterways are relacing two huge lock gates at the bottom of the Hatton Flight on the Grand Union Canal. The work involves taking water out of the 20 foot deep lock, removing the old gates and using cranes to put in the new five tonne gates at a cost of £19,000. The gates needed to be replaced because of all the wear and tear caused by the ever-increasing number of holiday-boaters using the canal.

• **Time for a trip to Prescott.** Many members will be familiar with the importance of the watchmaking industry to the history of Coventry, and of the work of the Coventry Watch Museum project in both raising public awareness of the industry, and in protecting sites and saving artefacts of that industry. Another town with an important watchmaking industry is Prescott, situated to the east of Liverpool. On Saturday October 17th, the Coventry Watch Museum group are visiting Prescott, in conjunction with a trip to Liverpool to tour the (revitalised) docks, and possibly even to take a ferry across the Mersey. Members of WIAS are very welcome to join this coach trip, and there will be a pick-up point in Warwick/Leamington as well as in Coventry.

Anyone interested can obtain further details from Martin Green.

A walk to the end of the pier

Living so far from the sea, the fate of Britain's piers may not be a high priority amongst Midlanders. but all will have rejoiced at the re-opening of Clevedon Pier on 23 May 1998. This elegant pier, stretching out into the Bristol Channel, was first opened on Easter Sunday 1869, and remained a source of much local pride until 1970 when two spans collapsed. In 1972, the Clevedon Pier Preservation Trust was set up to raise funds, and, supported by contributions from English Heritage, the National Heritage Memorial Fund and the National Lottery, the necessary finance was gathered together. Much of the £3million required to rebuild this grade II listed building has in fact come from the proceeds of local events, from beach barbecues to fishing marathons to the sponsoring of individual plank restoration. The cutting of the ribbon at the opening ceremony was carried out by Sir Charles Elton, whose great-great-grandfather had built the pier.



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