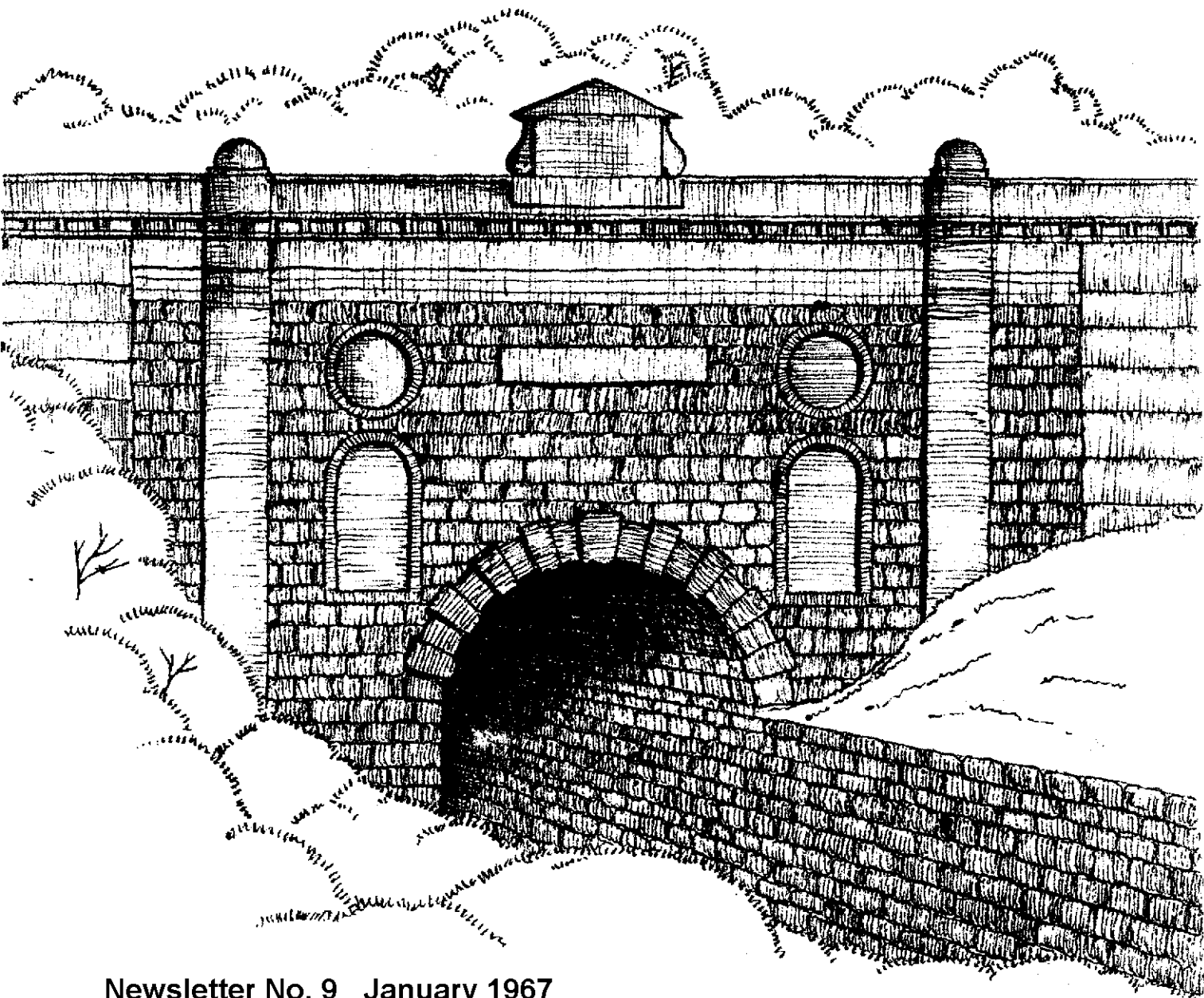


THE NEWSLETTER OF
THE GLOUCESTERSHIRE
SOCIETY FOR
INDUSTRIAL ARCHAEOLOGY



Newsletter No. 9 January 1967

N E W S L E T T E R

GLOUCESTERSHIRE SOCIETY FOR INDUSTRIAL ARCHAEOLOGY

NUMBER 9.

JANUARY 1967

President	Noel P. Newman, C.B.E., J.P.
Chairman	C.H.A. Townley, Rodborough House, Rodborough, Stroud
Hon. Secretary	M. Eastwood
Hon. Treasurer	R.H. Pullan
Newsletter Editor	G.N. Crawford
Committee	D.E. Bick
	I.M. Parsons
	W.G.H. Robins
	R. Rose
	L.F.J. Walrond
Co-opted members	Miss A. Chatwin
	N.C. Ferry
	W.R. Taylor

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E D I T O R I A L

In this issue I should like briefly to expand a paragraph in my last editorial when I mentioned that all research is valuable, always providing that we are not duplicating work others have carried out in the past.

In a lecture series last autumn Mr. Kenneth Hudson stated that a group of Bristol schoolboys spent two whole days measuring up a gas works, a type of industrial research which has been all too often neglected in the past. At the end of their work they were shown into the manager's office where, after hearing of the work they were engaged on, he took down a complete set of drawings of the works from a shelf. These boys could therefore have used their time much more profitably on one of the many sites still not surveyed.

I use this example not to criticise the schoolboys, but to show how important it is, when undertaking a major work of surveying, to try to first find out what drawings and documents are available. One article in this issue on drawings in the British Waterways Office in Gloucester shows how much is available in one limited sphere alone.

A different attitude can, I consider, be adopted for smaller sites where research into whether drawings are available could possibly take longer than doing the survey oneself. If you will excuse a personal example in this case I should like to mention a toll-house on the Wotton-under-Edge to Bristol road, a building which was beginning to look dilapidated, so I took a photograph and a few quick measurements. Travelling down that road again on the first Saturday of the New Year, not a trace remained of the toll-house. No doubt someone else has also taken dimensions but just in case they have not, notes and a rough drawing will be available on a C.B.A. card.

Finishing with a note on the contents of this issue, it had been intended to include a rather longer article, as usual, but it was not available in time and therefore I must apologise for rather a large number of short articles.

The editorial does not necessarily express the views of the Committee.

Contributions and letters for the next issue will be welcome and should be sent to :

Hon. Editor, G.S.I.A. Newsletter, G.N. Crawford,
c/o County Architect's Department, Shire Hall,
Gloucester.

DUE ACKNOWLEDGMENT SHOULD BE GIVEN TO ANYONE PUBLISHING AN ARTICLE, OR PART OF AN ARTICLE, INCLUDED IN THIS NEWSLETTER.

MAPS AND PLANS

at the British Waterways Offices, the Docks, Gloucester.

A small group of members used to handling maps and plans spent a useful Saturday morning on November 5th in one of British Waterways Offices at Gloucester Docks. Many of the drawings examined are already indexed so we made more detailed notes including dates, names of architects and engineers, scales and items of interest shown on the drawings.

The collection includes the whole of southern England but is naturally rich in drawings of the Gloucester and Berkeley Canal with its bridges, associated railways and the warehouses and housing at Sharpness. Plans of the warehouses at Gloucester Docks are kept at a separate Estate Office.

Quite a number of the drawings were titled 'Proposed' and it was difficult to know without further research whether the work was in fact carried out. I think in most cases the work was constructed, as otherwise the drawings would have been destroyed after a time, but there are a few with notes on to the effect that the work was not proceeded with.

There are quite a number of early drawings of the Gloucester and Berkeley Canal, some of which I know the originals or copies are in the County Records Office or the City Library, but it would be useful to have a check on how much original material is in the British Waterways collection.

Although one or two drawings were discovered with Telford's signature, the more important ones bearing his name were photographic reproductions and evidently the originals have been deposited elsewhere, probably in London.

Some drawings showed alterations or additions and these are particularly useful in that not only do they usually survey all the original work, where probably the originals no longer exist, but also show amendments made since. A small example is a drawing showing additional rooms added to one of the bridge-keeper's standard cottages on the Berkeley Canal.

Sharpness itself is very well covered for drawings, there being numerous details of the locks, gates, bridges, warehouses, sheds, offices and even all the housing, ranging from an ornate superintendent's house to rows of terraced housing. Luckily most of these drawings are dated and much of the housing was designed by Medland & Son, Architects, of Gloucester.

One interesting series of drawings on railways has not so far been indexed. Though principally covering Gloucester, Sharpness and the Severn Bridge, there were several maps of the Forest of Dean and further afield.

Another series of drawings was of works in the River Severn such as small lighthouses, one of ferro-concrete construction in the Hennebique System as early as 1907. Another drawing by the Gloucester Wagon Co. shows the adaption of a railway signal design to provide harbour lights.

Many of the drawings were signed by W.B. Clegram, Engineer to the Berkeley Canal, and also in the collection was a folio of his drawings which included engineering works, designed by him, in various parts of the country.

A number of drawings in rolls are mainly of canals in southern England and South Wales and these, which have not been indexed, remain to be examined on some future occasion.

G.N. Crawford.

NEGLECTED INDUSTRIES

At a lecture in Gloucester this autumn, Mr. Kenneth Hudson said that the following subjects had been seriously neglected and urgently required research :

Ports and harbours (including inland ones).

Brick and tile works and potteries. No book has been written on the location or history of firms.

Quarrying, gravel working and sand extraction. Again no book has been written.

Stone mines.

Factory chimneys.

Small country workshops. These will soon all disappear.

Workhouses. No book has been written.

History of roads, showing sections etc.

G.N.C.

GLOUCESTERSHIRE SOCIETY FOR INDUSTRIAL ARCHAEOLOGY

Minutes of the second Annual General Meeting held at Stroud College of Art on Friday, 30th September, 1966.

The following 1965/1966 officers and Committee members were present together with 24 other members :

C.H.A. Townley	-	Chairman
M. Eastwood	-	Co-optd. Acting Secretary
R.H. Pullan	-	Treasurer
G.N. Crawford	-	Newsletter Editor
W.G.H. Robins		
J.M. Strange		
L.F.J. Walrond		
Miss A. Chatwin	-	Co-opted

1. Apologies for Absence

There were apologies for absence from :

N.P. Newman	(President)
D.E. Bick	(Committee member)
E. Joyce	
M. Jones	

2. Technical Book Display

Prior to the main business of the meeting, Mr. Rogerson, the County Technical Librarian, had displayed some of the rarer and more unusual items in the industrial history and history of transport sections of the County Technical Library.

3. Minutes of the first Annual General Meeting (24th September, 1965)

These were read out and signed by Mr. Townley after being found correct.

4. Chairman's Report.

Mr. Townley opened his review of the past twelve months by saying that the continuing and growing support for the Society reflected the general upsurge of interest throughout the country in Industrial Archaeology. Numbers attending the lectures at Stroud had continued to grow. The last year had seen the first lectures at Cheltenham and Gloucester which were being supported by the Society. A member from each venue was being co-opted onto the Committee (Miss Chatwin had been co-opted for Cheltenham) to represent the interests of the Society and keep people at Cheltenham and Gloucester in touch with other activities of the Society. There had been another successful season of excursions - particularly the Gloucester and Sharpness canal trip. He thanked Messrs. Bowen and Rattenbury for another excursion to South Wales -

4. Chairman's Report (continued)

these were becoming almost an annual event. The Society intended to return their hospitality next spring, when the South East Wales Industrial Archaeology Society hoped to visit Gloucestershire. The Newsletter's success continued and we had set ourselves a high standard which could only be maintained by members continuing to provide contributions in sufficient number. Our collection of Record Cards had grown to over three hundred. He thanked Christopher Cox for his work on milestones etc. from which he had contributed over one hundred cards. Thanks were also due to Messrs. Apperly and Awdry for their work on local branch lines and to John Strange for leading field work, particularly on the canal. Members' attention was drawn to the plaque for the Brimscombe Port site which was on display. One of the Society's aims was to draw attention to sites of local industrial history by placing plaques at such sites. Appropriately, the Thames and Severn canal was our first. The County Planning Officer, Mr. N.R. Collins, had agreed to perform the unveiling ceremony on 29th October. Our grateful thanks went to Benson's Tools (who now occupy the port site) who were contributing towards the cost of the plaque.

The Chairman went on to talk about publicity. We had good support from the local press but they relied on us for information to publish. The Society needed a publicity officer and he appealed to anyone willing to take on the job of reporting Society meetings and other activities to come forward.

He wished to acknowledge the help the Society had received from the University of Bristol and particularly from Mr. Taylor. Mid year the committee had lost their secretary, Dr. Annis, who had been posted to the U.S.A. M. Eastwood had been co-opted onto the committee as acting secretary. He wished to thank all those who had helped in the continuing success of the Society.

5. Treasurer's Report

Mr. Pullan reported a very satisfactory balance of £124. 16. 5d. The accounts had been examined by Mr. R.H. Rogers, a Society member. Profit from excursions was shown at £46 but accounts for £20 on the Welsh excursion still had to be paid. Profit on the Christmas cards was £5. 7. 6d. but there were approximately 100 remaining for sale this year. The Chairman thanked Mr. Pullan for his report. Mr. Crawford moved that the accounts be adopted. This was seconded by Mr. Walrond and carried by majority assent.

6. Secretary's Report

Mr. Eastwood reported on the valuable work done by Dr. Annis - particularly the organising of a very worthwhile series of lectures at Stroud after Christmas 1965. The lecture programme for 1966-7 had been published. Members would see that evenings in January and March 1967 were set aside for Society speakers

6. Secretary's Report (continued)

and anyone with a topic or lecturette was asked to come forward. Excursions were reviewed in some detail. A pleasing aspect of helping to organise lectures and excursions was the publicity and new members they had attracted. Membership during the summer months had risen from approximately 110 to 150 members - much as a result of the lectures in Cheltenham and Gloucester and following excursions, particularly the Gloucester & Sharpness Canal trip. Ideas for excursions next season were mooted and further suggestions from the floor would be useful.

7. Election of Officers

The following were nominated for office and had agreed to stand :

Chairman - C.H.A. Townley
Secretary - M. Eastwood
Treasurer - R.H. Pullan

They were declared duly elected. The following were nominated as ordinary committee members :

D. Bick
G.N. Crawford
I.M. Parsons
W.G.H. Robins
R. Rose
J.M. Strange
L.F.J. Walrond

A ballot was held to elect six committee members and D. Bick, G.N. Crawford, I.M. Parsons, W.G.H. Robins, R. Rose and L.F.J. Walrond were duly elected. Mr. W.R. Taylor and Miss A. Chatwin would remain as co-opted members.

8. Activities 1966 - 1967

The Secretary noted several suggestions for excursions made from the floor of the house. Some of these would be incorporated in next season's programme. British Waterways were willing for a party of members to examine documents at Gloucester Docks Offices. Arrangements would be made to do this on Saturday mornings during the coming months. A plea was made for the County Records Office to be opened on a Saturday morning with the County Archivist in attendance to answer members' queries. Mr. Townley will keep in touch with Mr. Gordon regarding the progress of his proposed museum at Nailsworth.

9. Proposals

The Chairman formally proposed the election of a publicity officer but there were no nominations from the floor for this post. However, Miss Chatwin agreed to report the Cheltenham lectures to the Echo and Mr. Strange to report Stroud activities to the News and Journal and also the Citizen.

LECTURES - SPRING 1967

STROUD - The following alterations and additions have been made to the programme already published :-

- | | | |
|---------------|---|---|
| 13th JANUARY | - | Film evening |
| 20th JANUARY | - | D.E. Bick- Cornish Engine Houses in Wales and Shropshire. |
| 24th FEBRUARY | - | Brains Trust/Discussion on Fieldwork |
| 10th MARCH | - | Lecturettes by Society Members |
| 17th MARCH | - | Dr. J.R. Harris - Lancashire Domestic Metal Trade |

CHEL TENHAM - A series of six lectures to be held at Parmoor House, Lypiatt Terrace, Cheltenham, commencing WEDNESDAY, 1st FEBRUARY at 7.30 p.m.

- | | | |
|---------------|---|--|
| 1st FEBRUARY | - | Railway Archaeology of South Wales
R. Bowen |
| 8th FEBRUARY | - | Manufacture of Charcoal Iron
N. Mutton |
| 15th FEBRUARY | - | To be announced later. |
| 22nd FEBRUARY | - | Canals
E.C.R. Hadfield |
| 1st MARCH | - | Industrial Archaeology of Plastics
R. Rose |
| 8th MARCH | - | Decorative Cast Iron
R. Lister |

COURSE FEE - 10/- .

ENROLMENT - by attendance at the first meeting.

GLOUCESTER

- | | | |
|-------------|---|---|
| 6th JANUARY | - | First of a series of ten lectures given by Neil Cossons at 7.30 p.m. in the MANSBRIDGE CENTRE, WELLINGTON STREET. |
|-------------|---|---|

SURVEY OF THE INDUSTRIAL MONUMENTS OF THE BRISTOL REGION

BULLETIN No. 4

In this bulletin Dr. Buchanan states that Mr. Cossons and himself have received a commission to do a book in the David & Charles Industrial Archaeology series on 'The Industrial Archaeology of the Bristol Region'. This actually is a double commission because they are also working on a volume of illustrations on the Industrial History of Bristol, and they hope that both books will be published simultaneously.

When it was announced by the National Coal Board that the Old Mills Colliery was closing down, Mr. Cossons inquired about the steam winding engine made at the Faulton Foundry of William Evans in 1861. This is the oldest of the few remaining steam engines in the Somerset Coalfield. Thanks to Sir Arthur and Mr. Ralph Elton, the N.C.B. made a 10-minute film record of the engine at work. Now, Bristol City Museum has been offered the engine, provided they will collect and move it.

The Severn traw 'Safety' is again mentioned; it was refloated and removed to the Floating Harbour where it now lies grounded above high tide level near the west end of the New Cut, awaiting its final destruction. Also noted is the continuous threat to Temple Meads Station, both from British Rail and from Bristol City.

TEMPLE TO THE AGE OF STEAM

I expect many members will have seen the recent article in the 'Weekend Telegraph' by John Betjeman on St. Pancras Station, illustrated with some splendid photographs. It seems fantastic that the 240 ft. span of glass and cast-iron, designed by William Barlow, was for nearly 100 years the largest roof in the world without internal support. The brick vaults supporting this roof were cunningly designed as storehouses for barrels of beer from Burton. One of the illustrations shows Pentonville Road in 1881 with the horse trams and other traffic painted in great detail; it even includes a postman emptying a 'Penfold' letter box! While many societies and people are fighting to save the station, Professor Jack Simmons is writing its history which should be of great interest.

G.N. Crawford.

CORRESPONDENCE

35 Bath Hill,
Keynsham,
Bristol.

23rd October, 1966

The Editor,

Dear Sir,

In No. 8 of the Society's Newsletter appeared an article on Chew Valley Industry. Some further information on the area may be of interest to readers.

Mills are to be found at the following points :

- Grid. Ref. 645647 - Grist Mill, Compton Dando.
- Grid. Ref. 623643 - Church Farm Copper Mill, Publow.
- Grid. Ref. 632645 - Copper Mill, Woollard.
- Grid. Ref. 633644 - Tannery on stream from Hunstrete, remains of horse gin.
- Grid. Ref. 637642 - Gloucestershire Society for Industrial Archaeology ; stopped 1939.

This information Newsletter No. 9 January 1967 in Day, author of the article on the Albert Mill, Keynsham, which appeared in the second number of Volume 3 of 'Industrial Archaeology'. This article gives a more detailed history of that site, including illustrations of the interior.

One point on the Colour Mill, which is near the Chew Bridge at Keynsham, near the public park, is that as far as I know it has never been used as a swimming pool. It ceased working approximately 15 years ago.

At the junction of the Chew and the Avon, on the Avon itself, are of course the magnificent remains of the Keynsham Brass Mill, with the weir, some of the buildings and the manager's house still standing. All of these are visible from the main road from Willsbridge to Keynsham, and are in fact well worth seeing.

Near the Albert Mill is the Steel Mill site, and Mr. L.F.J. Walrond thinks that it is probably of the earlier of the two. The mill building is still standing (although re-roofed), but the head and tail races have long since silted up, and the wheel has disappeared, probably as a result of the construction of the leat for the Albert Mill in the early 18th Century. Documentary evidence, however, does exist which would indicate that the Steel Mill was in use until the end of the 18th Century, but it is uncertain just when it stopped working.

I hope this may be of some use to you.

Yours faithfully,

A.P. Woolrich.

INDUSTRIAL MONUMENTS IN THE MENDIP, SOUTH COTSWOLD AND BRISTOL REGION.

Neil Cossons. 32 pp. Bristol Archaeological Research Group,
c/o The City Museum, Bristol 8. 1967. 3/6d (4/- incl. postage)

Every member should make a point of getting this booklet by Neil Cossons; every page contains a mass of valuable information and practically every site has a map reference, which makes it so much more easy to locate those you wish to visit. The reference on page 13 to the best Snuff Mill site should, however, be ST 625765.

This 'field guide' is divided into five chapters :

- I. Bristol: Port and Commerce.
Docks; Shipbuilding; Commercial buildings.
- II. Traditional Industries
Logwood, sugar, snuff, glass, soap & cotton industries; wool textiles and paper.
- III. Mining, Quarrying and the Metal Industries.
Coal; lead; zinc; copper and brass.
- IV. Wind and Water Mills
Watermills; windmills
- V. Transport and Service Industries.
Roads - tollhouses, milestones, bridges; Canals;
Tramways and railways;
Transport Industries; Service Industries.

A map of industrial sites is included but this I find rather frustrating as so few place names are given and the sites just appear as a pattern on the map. If each could be given a number, perhaps the number could also be included in the text.

In most cases the present state of the building is included, a most useful reference, and all too often the statement that demolition is imminent is noted. Unfortunately the three-storey workers' cottages at Warmley mentioned on page 10 have already been pulled down. The threat of demolition to so many buildings means that a Society visit to Bristol should be arranged as soon as possible.

The double cover of the booklet is taken from a most interesting lithograph of Bristol in 1887 and I should have preferred the contents to have been confined to the Bristol Region. The Mendips have

already been covered by Robin Atthill and the excursion into the South Cotswolds is a failure, I consider, with so much omitted; for example the mills on the Little Avon near Charfield and the warehouses at Sharpness. This would have left more room for industrial monuments not included, such as breweries, stone quarries, brick-yards, ferries, cider factories, lesser industries, workhouses and cast-iron street furniture.

A minor criticism is that references to books sometimes interrupt the text and I should have preferred them at the bottom of the page. However, any criticisms should not conceal the fact that this is an excellent booklet and I only wish that someone could write a similar one for our region.

G.N. Crawford

THE BLACK COUNTRY IRON INDUSTRY.

W.K.V. Gale. 192 pp. The Iron and Steel Institute, London, 1966.

2 maps in endpapers and 1 map in text, 1 production chart, 1 good sectional drawing of blast furnace, 1 drawing of rollers in rolling mill, Gloucestershire Society for blast furnaces, 1 plate of sections Industrial Archaeology 1 plate of sections through puddling Newsletter No. 9 January 1967 of puddling furnace tools, 1 plate of ~~typical furnace sections~~, 1 plate of positions of men at various mills and 5 photographs.

From this it will be noticed that this is no book of light reading with plenty of glossy photographs to flick through, but a good solid text book on the subject that will surely remain the standard work on the subject. For readers interested in industrial archaeology the story is developed in chronological order up to the present but there is unfortunately no gazetteer of sites which have useful remains. The only relevant information would appear to be :

Blast Furnaces - 2 at Bilston in 1959, one built in 1954
the other modernised.

Forges - 1 at Dudley and 1 at Wednesbury in 1959.

In the Epilogue details are given of the 1954 blast furnace above, the only one now left producing molten iron for the steel works.

There is a minute by minute timetable of the working of a heat at a Black Country Forge in March 1951. This very clearly indeed indicates how plant and buildings were actually used and could well serve as a model for recording local industries that are likely to cease.

Finally, there is an excellent glossary of Black Country iron industry terms, but there is no table of references.

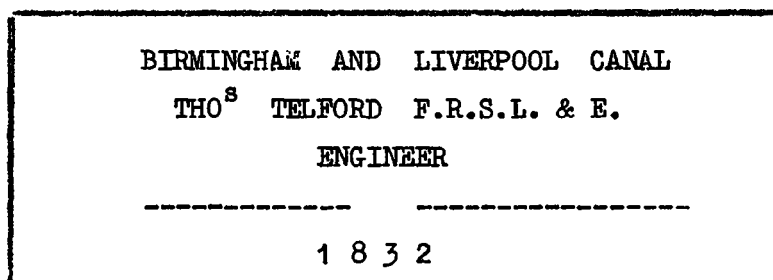
*****I.M. Parsons.

SOCIETY VISIT TO STAFFORDSHIRE, SATURDAY, 10th SEPTEMBER, 1966

A coach load of members set off early in the morning for our first Society visit to Staffordshire; no doubt it will not be the last, as this region is particularly rich in industrial remains of many kinds.

After passing through Wolverhampton we were soon in 'canal' country, with the Shropshire Union Canal on our left and the Staffs. and Worcester on the right. Our first stop was at Stretton Aqueduct where we met our well-informed guide for the day, Mr. R. Sherlock. Here the Shropshire Union Canal crosses over Watling Street in a cast-iron trough, but, to make construction more complex, the canal crosses the main road at a skew.

One of the most interesting features of this trough was the inscription on the plates :



From this we learned the earlier name of the Shropshire Union, the name of the engineer and that he was a Fellow of the Royal Society of London & Edinburgh, and the date. Also, from the erased fourth line it could just be made out that W. Hazledine was the Contractor. The only possible explanation for this erasure is that Wilson Bros. were the contractors for this length and Hazledine's name was removed to avoid trouble.

Before leaving it was pleasant to see a couple of pleasure boats passing over the aqueduct, giving plenty of scope for the photographers in the party.

We proceeded north to the small town of Penkridge where we were shown the sandstone railway viaduct, probably completed in 1836, and the first important design of Thomas Brassey. Originally on the Grand Junction Line between Birmingham and Newton-le-Willows, it became much less used ten years after the opening when the main line through Rugby became the direct route from London to Liverpool. We all admired the fine sweeping lines of this viaduct.

Also at Penkridge we had lunch before travelling alongside the Staffs. & Worcester Canal to Milford where numerous lines of communication are close together - the main railway line to the north, the River Sow, the canal and several roads. After looking at road bridges over the river and canal we walked along the latter to see James Brindley's stone aqueduct over the river. This part of the Staffs. & Worcester Canal was opened in 1772 and the aqueduct then had a puddled clay lining, though now it is lined with bricks.

No distance away was the entrance to Shugborough Hall, with the arms of the Earls of Lichfield on the lodge. We walked down the drive to the west entrance of the rail tunnel on the main Euston-Glasgow line, completed in 1847. This entrance has been made to look like a mediaeval castle gateway to comply with the wishes of the Earl.

Back in the coach on our way to the Hall car park we saw several architectural follies in the park. We all made for the County Museum, which is housed in outbuildings and stables, and found that there was all too much to see in the short time available. We wandered through rooms containing cookery and laundry items of Victorian times, an archaeological gallery, gun room, lock display, stained glass gallery, stable fittings, all expertly displayed, to the Brew House. Here, members of a Burton Society, who were there at the same time, explained some of the brewing processes to us.

In an adjoining room were the industrial exhibits, especially featuring the iron industry and railways. The complete booking office from Gosall had been imaginatively re-erected here; a valuable piece of industrial history, as too often one finds a concentration on rolling stock.

The agricultural gallery had a section on millstones and the remaining six stables housed the Shrewsbury collection of horse-drawn vehicles which included two omnibuses and the Shrewsbury State coach. This was the end of the museum and it was time for refreshments in the cafe, though some of us managed instead a quick tour round the beautifully furnished Hall.

Still in the park, we went in the coach to see the highly ornamental bridge carrying the Lichfield Drive under the main line, and on the way out passed the other end of the rail tunnel, this one being slightly Egyptian looking.

Passing the edge of Cannock Chase, we quickly reached Rugeley and then turned into the Chase to visit the Moors Gorse Pumping Station of the South Staffs. Water Works. Here this company have nobly preserved four beam engines, working in pairs, which were manufactured by James Watt & Co. in 1879. These engines worked until 1956.

This was our last visit and we said goodbye to Mr. Sherlock, with many thanks for giving up his Saturday for our benefit, before returning through the centre of Birmingham after a most interesting day.

Neville Crawford.

DISREPUTABLE MILESTONES

From "The Cruise of the Land Yacht Wanderer" by Gordon Stables CM MD RN published in 1886.

p.147 England is the land of finger posts and disreputable milestones. There are nine types :-

- a) the squat stone milestone
- b) the parallelogram milestone also of stone
- c) the triangular milestone with a reading on two sides
- d) the roundheaded dilapidated milestone that tells you nothing
- e) the wedge-shaped milestone, stone with an iron slab let in
- f) the reticent milcstone which instead of names only gives you letters
- g) the mushroom milestone, of iron.
- h) the respectable iron milestone
- i) the aesthetic milestone of iron

(sketches at the end of chapters of the book illustrate these different types).

Warren Marsh

Minutes of the second Annual General Meeting ...

continued from page 7.

10. Any Other Business

Mr. Strange asked members to pass to him for the Society Scrap-book any relevant newspaper cuttings etc. which came into their possession.

The business of the meeting ceased at 2045 hrs. Members were then shown two films, "Nine Centuries of Coal" & "Iron Ore in Great Britain".

CRUMLIN BRANCH OF THE MONMOUTHSHIRE CANAL

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The Publicity Officer of the Kernet & Avon Canal Trust, (Bath and Bristol Branch) has kindly sent the Society some notes on the flight of locks on the Crumlin Branch of the Monmouthshire Canal, mentioned in the latest issue in an account of the Society's visit to South Wales. These notes are as follows :-

"The author of the article observes that one of the locks in this remarkable flight is of an unusual shape and he suggests that this might have been to enable two boats to pass in the lock chamber. This is, in fact, not so.

This unusual lock might be termed a 'reservoir lock'. The lock below the unusual shaped one is deeper and therefore of greater capacity than the unusual shaped one would be if it was built to normal dimensions. The intermediate pound is not big enough to supply the lock with water so the only way to supply the lower lock with enough water for it to work was to widen out the lock above to meet the capacity of the lower lock. Its unusual shape enabled a greater volume of water to be passed down to the lower lock.

This unusual alteration may have been made after navigators had experienced difficulty and delay in working the flight because of a lack of water to operate the deep lock. The widened out lock itself may have presented some difficulty in operation especially to the navigators of craft working down the flight who would have to be careful that their craft did not settle on the 'shelves' at the side of the lock chamber, as the lock emptied.

This is a difficult thing to explain in writing - I hope that I have made it reasonably clear. I do not know of any other locks on the canal system like this one although a similar principle is used in two shallow but diamond shaped locks on the southern section of the Oxford Canal between Banbury and Oxford."

"ENGLAND'S GLORY".

Local newspapers have recently included a plea for any historical or pictorial records of Messrs S.J. Moreland & Sons, as much of their match manufacturing records from 1867 to approximately 1900 have been destroyed. Any such information would be gratefully welcomed by the Works Department, Bristol Road, Gloucester.

After one hundred years of match making it would be nice if this firm could produce a booklet celebrating the event, similar to the excellent one published by its neighbour across the Bristol Road, several years ago.

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GLASS MANUFACTURE IN GLOUCESTER

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In the DAY BY DAY COLUMN of the 'Gloucester Citizen' of August 9th 1933 there appears this account of the old Round House at the Quay, with a picture of it :-

"Gloucester is losing a familiar landmark in the old Round House at the Quay, which is being demolished in the course of the extension of the premises of the West Midland Farmers Association in order to provide a direct approach to the mills from the Quay. Though no great archaeological interest can be claimed for the building, it was nevertheless a link with one of the former small industries of the City. Erected in 1674 as a glasshouse, it was formerly a much taller conical shaped erection, and the first mention of it, as traced by Mr. Hearle, the manager of the W.M.F.A., is found in the register of St. Nicholas Church under date of 1674. "In the summer of this year", the register runs, "was built the great conical glass house in the Island." The baptismal register of the parish in the following year contains the names of several children of glass blowers in the parish. Half-a-century later the 'Glos. Journal' of 1741 had the following announcement : "The Glass house in the City of Gloucester will be put to work and by the 30th of this instant May, glass bottles will be made with as fine and good metal as any in England, and of all sorts and shapes; and any gentleman may have their coats of arms or any other mark on them as they please. Likewise pickling pots, milling glasses and butter pots - all sold on a low term as elsewhere by your humble servants John Platt and Company."

On May 1st 1741 a further announcement in the Gloucester Journal was made offering the premises for immediate letting in consequence of the deaths of "some of the partners, one of whom was the manager of the works". The utensils, very little worn for using, and the stock of bottles were to be sold very reasonable, and separate if required either wholesale or retail. Alternatively if any well qualified person was willing to enter as a partner and manager, the surviving partners promised good encouragement. To this advertisement was appended an N.B. "It is presumed the glass-house may be carried on to a great advantage, there being a large stock of ashes in the City."

Sundry references are also found in regard to the Round House in the deeds to the property. An indenture dated March 1775 states that "a glass-house hath long been erected."

1782 Benjamin Hyett, Esq. of Painswick sold a third share of the property, on which was a lime kiln built in the form of a glass house, to Mr. Wakefield, a barge owner.

1835 A reference to a certain circular building formerly called the Glass-house.

OTHER SOURCES OF INFORMATION

1. Gell & Bradshaw's Directory of Gloucester - page 37.
Street plan in above Directory shows Glass house.
2. Painting in County Records Office shows kiln.
3. Hall & Pinnell's Map of Gloucester, 1780.
4. Kip's Map of Gloucester (pictorial) 1710.
5. Water colour by R.J. Kendall on Christmas card published by Friends of Gloucester Cathedral.
6. Architectural plans and drawings made before demolition are in the possession of Messrs. W. & E. Leah, Clarence Street, Gloucester.

Blocks of glass slag can be seen on top of the wall in Organ's Alley, Barton Street, which encloses two old burial grounds. Also in the garden wall of Home Farm, Hempsted.

Miss G.M. Davies.

ADDITIONAL NOTES by the Editor.

A tracing has been made of the sketch plans and roof detail in the possession of Mr. Leah, but much of this material is of limited interest as it shows the floors and roof constructed when the glass house was truncated and used as a store.

The initial diameter appears to be 49' 6" though a diameter at right angles seems to be a few inches less. One dimension gives the wall thickness as 3' 9" at an opening and the height to eaves level is 28' 10" though it is not clear whether this total of the floor heights includes the actual floor thicknesses. The wall thickness has now become 1' 1 $\frac{1}{2}$ " at eaves level.

Mr. Leah has in his possession a photograph of the roof timbers taken during the demolition. The conical roof was surmounted by a central ventilation turret.

(continued at the bottom of page 19 ..

A HISTORY OF THE MAPS OF GLOUCESTERSHIRE

FOR THE INDUSTRIAL ARCHAEOLOGIST

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Before maps were in common use, it was the practice to make a written survey, but now we all use maps to a greater or lesser extent. The industrial archaeologist finds them useful for numerous purposes, such as :

- a) Locating a known industrial site.
- b) Research in locating unknown industrial sites.
- c) Relating one site to another.
- d) Studying communications.
- e) Finding the way to a site.
- f) Working out grid references for C.B.A. cards.
- g) Preparing site plans.

My history starts in the middle of the 16th century with

1577 SAXTON'S coloured map of the county showing hills drawn typically pictorially. Though this map is of little use to the industrial archaeologist, later editions in the next century included roads.

1610 SPEED'S county map was based on Saxton's but included useful inset plans of Gloucester & Bristol. Part of the description under the Gloucester plan reads "This Citty is not great but standeth holsonly & sweetly, as it were upon a hill, the streets descending every way from the Cross."

In 1610 much of the city walls were still standing and there was a windmill approximately where Suffolk House is today.

cont

continued from previous page

Also in Mr. Leah's possession is an undated print of Kip's 'Picturesque Gloucester', a view which shows the glass house on the quay together with the adjacent lime kiln which appears to be similar in height and shape. He also showed me the photograph of the Round House on page 179 in 'Picturesque Gloucester', published by the Cheltenham Newspaper Co. in 1928.

1675 OGILBY'S ROAD ATLAS of England & Wales in 100 plates.
The Chipping Sodbury - Bristol road shows side roads marked
'To the Colepits' and 'To Bristol another Way'.

1777 ISAAC TAYLOR'S beautifully coloured map of the county was drawn from an entirely new survey and this was the first county map on a large scale and also the first to show industrial archaeology in great detail. Even industry is illustrated in the title drawing, and the map itself shows forges, water and wind mills, coalpits, turnpike roads, paper and iron mills, copper works and lime kilns. Between Winchcombe and Postlip, for instance, there are three paper mills shown, and south-west of Newent near Bowsdown there is a coal works.

The larger houses have the names of their owners, well-known names like Clutterbuck and Watham between Stroud and Brimscombe, and Sir Wm. Strachan at Hucclecot.

Not industrial archaeology but interesting is the note at Tortworth 'Chestnut planted in Reign of King John'. As many readers know, this tree still lives.

1783 WHITWORTH'S THAMES & SEVERN CANAL as well as showing the canal, this map names a large number of mills between Stroud and Sapperton and also the turnpike roads. The map was engraved by William Faden who later published the first Ordnance Survey maps until that department secured staff and offices of its own.

This map is typical of a large number, some of which are undated, showing both the Thames & Severn and the Stroudwater Canals.

1787 JOHN CARY'S county map is the first to look like the maps of today, though of too small a scale to be useful to the industrial archaeologist, except for the study of the road pattern of that time.

The 18th century was the time of the foundation of modern map making and the entry of the State into competition with private map making.

1792 PINNELL'S GLOUCESTER & BERKELEY CANAL shows the proposed canal entering the Severn at Berkeley Pill. From this date onwards there are numerous drawings of this canal giving the different proposed routes and places of entry into the river.

1800 ISAAC TAYLOR'S county map was republished by William Faden, only this edition had a plan of Gloucester in one corner.

1804 C.S. SMITH'S county map, coloured, is based on Cary's. Shows turnpikes and distances between market towns.

1805 COLE'S GLOUCESTER gives the Gloucester & Berkeley coming into a basin which has access to the Severn. No warehouses have yet been built. Also shown is the Workhouse on the site of the former Magistrate's Courts in Bearland.

1809 TRINDER'S CHELTENHAM when the town did not consist of much more than the High Street. Four turnpikes, Cheltenham Mill and the Workhouse are also indicated.

Town plans of Cheltenham appear fairly regularly after that date. For example I have seen ones dated 1831, 1856 and 1868, but there must be many others, and the rapid growth of the town can be studied in some detail.

1824 BRYANT'S large coloured map of the county was published. This is a useful map showing water and wind mills, turnpikes and toll bars, and mines in the Forest of Dean. Scale is $8\frac{1}{4}$ " to 6 miles.

1824 C. & J. GREENWOOD published a similar map, as both Bryant and Greenwood were surveying counties at the same time.

1828 - 31 ORDNANCE SURVEY 1" map of county was the first from a scientific survey. Up to 1831 county maps had been based on Taylor but from this date onwards they were derived from the O.S. map.

Numerous mills are named round Gloucester, Stroud, Painswick and Cranham, but not much industry in the Forest. This part of the map is difficult to read due to woods and hill hachures which are a feature of these first O.S. maps. These hachures make even comparatively flat country look mountainous and tended to obscure details. Roads are clear but lettering is rather weak.

The survey for these early sheets was generally carried out at 2" to the mile and the 1" scale was adopted because it was convenient for the movement of infantry. The first four sheets, those of Kent, had in fact been published in 1805 in Napoleonic times.

1835 - JOHN WOOD'S STROUD at $7\frac{1}{2}$ " to 1 mile, names the owners of many houses and fields.

1840 - approx. Most maps around this date showed actual or projected railways. Further details can be obtained from the "Descriptive Catalogue of the Printed Maps of Gloucestershire 1577 - 1911."

1847 - ATKINSON'S FOREST OF DEAN is at 4" to 1 mile, a large map but a little disappointing in the amount of detail it shows. Indicates collieries, especially north of Cinderford; furnaces, mostly between Parkend and Coleford, and tramways.

1853 O.S. 1" reprint indicating railways and there was a further revision in 1862.

1855 CRUTCHLEY'S RAILWAY MAP OF GLOUCESTER was really of the whole county. Later this was called a road and rail map.

1866 O.S. 1" GEOLOGICAL coloured. The Bristol coalfield shows up very clearly.

1876 - 87 O.S. 25" (really 1 : 2500) is important for the industrial archaeologist as all industries are named. For example the Stroud sheet of 1885 indicates several dye works. In this first edition all buildings stand out as they are coloured red. Sheets are available for the whole country except for mountainous and moorland areas.

Although no contours are shown, plenty of spot heights and bench marks are indicated, the levels being then based on Liverpool. Twelve different types of boundaries are marked.

All the 25" plans until 1945 were known as the County Series and each covered $1\frac{1}{2}$ miles by 1 mile. It is useful to remember that 1 acre is approximately 1 square inch. Parcels of land were allotted numbers which were consecutive throughout a Parish, the acreages being printed as well after 1884.

1879 RAILWAYS IN DEAN FOREST 1" A useful map with railways indicated in different colours.

1883 - 92 O.S. 6" maps are useful for the industrial archaeologist as they cover the whole country and are also true to scale, except for some roads which are made wider to include street names.

This is the largest scale map showing contours and bench marks are also given. All boundaries are given but there is not the same detail as the 25" and parcel numbers are not given.

These sheets up to the end of the last war were also known as the County Series and divided up into quarter sheets, each 3 miles by 2 miles. The Society owns copies of seven of these sheets, all dated around 1890 and here again types of industries are indicated. It is interesting to note the number of small breweries shown; I estimated that there was only 200 yards between those at Thrupp and Brimscombe, near Stroud :

1884 O.S. 1 : 500 plans were only published of towns and are extremely valuable because of the amount of detail they show - I have one sheet on which practically everything shown is of interest to the Industrial Archaeologist. Unfortunately the O.S. abandoned this undertaking shortly afterwards and it was left to local authorities to revise them if they were interested.

1890 - 93 O.S. 1" New Series, or 2nd Edition was based on a much more accurate survey at 6" to the mile. As reprints were made, railways were added, and parish boundaries were shown if they appeared on the tithe maps.

1897 OFFICIAL RAILWAY MAP of the county and Oxfordshire was published by the Railway Clearing House.

1901 - 4 O.S. 24", 2nd Edition when parcels of land divided by new fences retained the old numbers but had suffixes a, b, c, etc. added for the new divisions.

1903 - 5 O.S. 6", 2nd Edition

1903 - 9 O.S. 1", 3rd Edition was published in two forms, first a Small Sheet without hachures, and second the Large Sheet Series (or Fully Coloured). Hill hachures were implemented by contours, though these and parish boundaries are sometimes difficult to follow. For the first time O.S. maps were folded and given covers. One of these 60 years old maps in my possession is still in excellent condition although used quite regularly.

1904 INDUSTRIAL MAP OF GLOUCESTERSHIRE published in 'Industrial Gloucestershire', Chance & Bland, Gloucester. This map shows the principal industries and mineral deposits listed under each town and village, but in very small print. The brochure itself is interesting for the photographs and drawings of industries and transport.

1911 OFFICIAL RAILWAY MAP 2nd Edition has detail plans of Gloucester and Cinderford. The accurate distances between each station are given and my copy has a note in red ink stating that it is 35 chains from Dudbridge junction to Stroud Gas Works.

1914 - 25 O.S. 1" - 4th Edition known as the 'Popular'. This edition was more interesting in appearance; hachures were omitted and additional contours were interpolated at intervals of 50', though not distinguishable from those surveyed. A more careful road classification was made but it must be admitted that the roads are rather ostentatious.

1931 O.S. 1" - 5th Edition was noted for a change in the style of writing and there were also quite a number of new symbols such as wireless masts and electricity lines.

1933 PAYNE'S COUNTY RESEARCH maps were originally drawn 1" to a mile and coloured. Reduced in size they were republished in his book on the county. There are a large number of these maps, some of which are interesting for the Industrial Archaeologist. The Industry map shows the location, type of industry and proportion of men and women employed. That showing accessibility gives the capacity of buses on the various routes and the number of trains stopping at stations and halts.

A map titled 'Electricity' indicates the areas and names of the former power companies and the routes taken by the 132 kv lines of the Central Electricity Board.

1940 - 46 O.S. 1" - 6th Edition called the 'New Popular'. This edition is important as it includes the National Grid for the first time. The grid is divided into 500 k. squares, each having an initial letter. By a coincidence, the initial letter of England and Scotland north of a line drawn from the Lakes to Scarborough is N, and that of most of Southern England is S.

These squares are further divided into 25 number 100 k. squares, providing a second reference number, the letter I being omitted. These two reference letters should always be given, in addition to the six figures of Eastings and Northings, if your reference is likely to be used nationally, for example on C.B.A. cards. Your grid location will be accurate to the nearest 110 yards.

Unfortunately, the 1" maps do not fit neatly into the squares, because if they did some maps would be mostly sea. The SWINDON sheet, for instance, which covers part of the county, is on parts of squares S0, SP, ST and SU.

1945 - O.S. 25" NATIONAL GRID PLANS. The original sheets were published 1k. square, but since 1959 two plans have been published together with the long dimension E to W.

To obtain plan numbers, on 1" O.S. sheets take the 4-figure reference of the S.W. corner of a 1k. square preceded by prefix grid letters. If two sheets are combined, you give both references, e.g. for Stroud, St.8405 and St.8505. At the same time 50", or more correctly 1 : 1,250, plans are being published and will cover all towns with a population over 20,000 as well as a number of other urban areas. Plan numbers are similar to the 1 : 2,500 only each sheet is divided into four, e.g. for Stroud, ST.8505 SW (or SE, NW and NE).

1945 - O.S. 2½" approx. (1 : 25,000) combines the best features of both the 6" and the 1" and is a useful map for the I.A. Last year the Second Series was published and these sheets are 20K by 10K. The 6" maps are also now published as National Grid sheets.

Other maps worth examining, especially in the study of agriculture, are the Tithe and Inclosure Maps. The former were drawn from 1837 onwards to meet the requirements of the act, changing payment in kind to a settlement in money. They give the ownership and occupation of every parcel of land and the names of farms and mills.

Three copies of each map were made for the parish, diocesan and central records. If it is not possible to locate the first

two, the Tithe Redemption Commission, Finsbury Square, London E.C.4 has copies of all.

Enclosure maps can be much earlier, as in the case of Todenham where some fields were enclosed as early as 1593, but most were enclosed mainly in the late 18th and early 19th centuries.

The enclosure of land is important to the Industrial Archaeologist who is interested in the pattern of roads. Many ancient roads were diverted and replaced by new roads, mostly outside the enclosures.

Late enclosures in the 19th century were chiefly of commons and waste lands, but a few open-field villages, such as Upton St. Leonards, continued. By now, however, the publication of O.S. maps made the enclosure maps unnecessary.

Finally, plans prepared in connection with sales of property often reveal items of interest to the Industrial Archaeologist, and plans attached to legal documents may often give a lead regarding the date of erection of a building.

G.N. Crawford.

LISTED BUILDINGS IN THE STROUD VALLEYS

I was looking recently at the number of 'listed' buildings in the Stroud Valleys between Stroud and Chalford and Stroud and Nailsworth. Although there are plenty of domestic buildings and a couple of pubs on the list, I could only find four mentions of industrial buildings and this in an area said to be only second to Coalbrookdale in industrial interest. In class II are Hope Mill, between Brimscombe and the Phoenix Iron Works, and the circular tower near the main road at Frogmarsh, Woodchester. Class III includes Frogmarsh Mill and the southern portion of Dunkirk Mill, also in the Nailsworth Valley. I think our Society should make a list of further buildings it considers are worthy of preservation, as, although listing does not automatically mean that the building will be saved, at least we should hear about it if destruction were threatened.

G.N.C.

BRISTOL REGION

THE BOOKLET REVIEWED ON PAGES 11/12 WILL BE AVAILABLE FROM
MESSRS. W.H. SMITH'S BOOKSHOP IN GLOUCESTER.

SOME NOTES ON THE NEWENT COALFIELD

The pleasantly undulating countryside to the west of Newent conceals a tiny coalfield, unworked for many years and now almost forgotten. Its existence was certainly known in 1790 when borings were put down 23 yards, probably near Oxenhall, by a Mr. Dykes for the Hon. Andrew Foley. A total thickness of nearly 8 feet was found, made up of six seams, the thickest of which was 2 feet 9 inches.

The coal-bearing area extends several miles in a north-south direction, from Great Bouldon to Gamage Hall near Dymock. Never more than a mile wide, it has been chiefly exploited near Great Bouldon and in the area between Lower House and White House, to the west of Oxenhall. Because the coal had a high sulphur content it was unsuited for most domestic purposes, and this is the likely reason why mining was only on a small and sporadic scale.

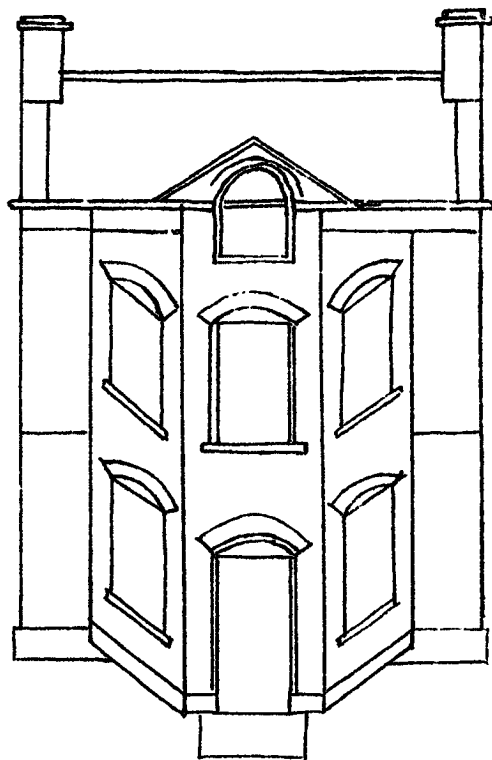
In the last decade of the 18th century, however, the outlook was very promising. The Gloucester-Hereford Canal had been opened as far as Oxenhall and the ready transport thus provided was a considerable stimulus. The Canal owners themselves sank a pit at Hill House in 1794 and leased it to a Mr. Richard Perkins. A short branch from the Canal was built towards it but does not seem to have extended much beyond the Oxenhall-Newent road. The coal was probably conveyed by horse and cart, and transferred into barges at the Canal branch.

The workings were apparently a failure, as a few years later it was reported that "little appears to be doing at the collieries". Nevertheless they were again at work in the 1840's, at a depth of 100 yards, with three seams of coal (1 ft, 1 ft 8 ins and 6 ft in thickness). Water was of so little consequence that it was drawn up by a barrel. After twelve years the mine was again abandoned but the industry revived about 1880 when the Newent Colliery Co. opened a new mine in the south side of the lane from Oxenhall to Gorsley, near the White House. According to conversation with an old inhabitant in 1957, whose father helped to sink the shafts, the first load of coal went to the George Inn at Newent. There was a 70-ft-high chimney at the mine, and when it closed about 1891 the boiler was taken to Gloucester by two traction engines. Various tools and a donkey-engine used underground were never brought to the surface. The old shafts and grass-grown dump were, until recently, still to be seen, before the site received the attentions of a bulldozer.

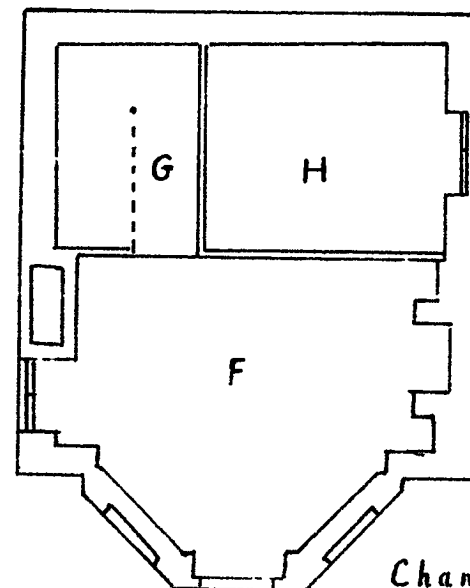
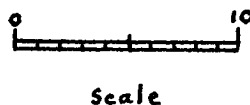
The Great Bouldon workings were active in the 1790-1800 period, and grassy mounds still show the site of these operations. Murchison, writing in the 1830's, considered that open-cast mining had been carried on in the vicinity many years previously. Coal has also been mined at Pella and Holders Farm, and thin seams were encountered during construction of the Canal tunnel in 1797.

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NUBIS ASH GATE - II



Principle Front



Chamber Floor

- | | |
|-------|------------------------------|
| A | THE KITCHING |
| a | STAIRCASE |
| B | CELLAR |
| C | THE PASSAGE |
| D | THE PANTRY |
| E | BACK KITCHING |
| F | FRONT BEDROOM |
| G | STAIRS LANDING |
| H | BEDROOM |
| I & L | ACCOMODATION GATES |
| J & M | HORSE GATES |
| K & N | PRINCIPLE GATES |
| | PRINCIPLE FLOOR 9 FT HIGH |
| | CHAMBER FLOOR 8 FT 3 IN HIGH |

After the Newent Colliery Co. stopped work no further mining seems to have been undertaken, although there is strong geological evidence that the coal-field extends easterly, on the other side of a north-south down throw fault.

The locations of several of these old collieries are shown on the Ordnance Survey 6" maps, but visits to the sites usually reveal little of interest since nearly all traces of the workings have long since disappeared. No information about the output of the Newent coalfield has yet come to light, and further research is needed on this and other aspects of a bygone local industry.

D. E. Bick

NATIONAL MONUMENTS RECORD -- REPORT 1964-1965

This report has recently been published, rather belatedly considering that it only consists of seven pages of text and four of photos, including Ironbridge and an early 19th century factory in Leicester in the Gothic style.

A long paragraph draws attention to the possible fate of many railway stations, especially the smaller ones, and also mentions that the railway authorities have huge numbers of plans and drawings, the future of which seems to be undecided.

The following paragraph is also on industrial archaeology and gives a pat on the back to one of our members. It says : "We have received much practical help from Mr. Lionel Walrond, the Curator of Stroud Museum (Gloucestershire), who is allowing us to make prints from some two thousand negatives he has made of early industrial buildings in that part of the country." They also say that they have copies of all the C.B.A. cards handed in, arranged in subjects under each county.

G.N. Crawford.

TURNPIKE ROADS IN THE BERKELEY & DURSLEY AREAS

This article by Mr. R.A. Lewis had references to the gate at Nubis Ash at the junction of the main road from Gloucester - Bristol and road 7 to Dursley. Mr. Smith of the County Records Office has drawn Mr. Lewis' attention to plans and an elevation of the toll house at this intersection; these are now reproduced on the previous page, to be read with the notes in Newsletter no. 8.

THE RIVER SEVERN - MR. F.W. ROWBOTHAM.

The Engineer of the Severn River Board gave a most interesting and entertaining ninety-minute lecture on the River Severn, illustrated by many slides, to a packed room in the Art School.

The first slide reminded his audience that the Severn is closely allied to industrial archaeology throughout its length, for near the source are remains of lead mines. The first town on the Severn, Newtown, Montgomery, was noted for tanning and flannel making in the past (see Vol. 2 No. 1 The Journal of I.A., 'Newtown and the Woollen Industry').

Farther downstream at Bridgnorth was situated one of the first mechanical waterworks, set up in 1706. The Severn Valley could claim to be the cradle of the Industrial Revolution, for Coalbrookdale was the site of the Darby family's famous works, and over the Severn was constructed the first cast iron bridge in the world, in 1779. The activities of John Wilkinson, the famous ironmaster, were also associated with this area.

Mr. Rowbotham then took his listeners past Bewdley showing Telford's stone bridge over the river and on to the Mythe Bridge, Telford's majestic iron bridge over the Severn at Tewkesbury, manufactured by Hazeldine of Bridgnorth. Mention was made of Ashleworth Ferry where horses had to be ferried over to the other tow-path because of the steep bank at Wainlodes. This ferry closed about 1912.

Approaching Gloucester, the speaker explained how the railway company had implemented the letter rather than the spirit of the law by constructing a swing bridge over the river, as they had been instructed, but had omitted the machinery for working same, so the 'Black Bridge' as it was called, never moved. This swing bridge has now been replaced. The Westgate Bridge by Smirke was replaced by a temporary steel bridge which has remained ever since.

Illustrating Telford's bridge at Over, Mr. Rowbotham explained how the bridge had been weakened by movement of the buttresses and added that Telford could never have foreseen the convoys of tanks which passed over it in more recent years.

Attempts made to overcome the obstacle of the Severn below Gloucester had been numerous and ambitious, one of the earlier ones being a scheme for a road and tramway tunnel under the river between Arlingham and Newnham. Undated plans, which Mr. Rowbotham estimates as between 1870 and 1880, were deposited for a bridge between these points. As late as 1949 a Mr. Hamilton started to build a pontoon

bridge between Newnham and Arlingham, using a floating airstrip which had been constructed originally to help in the invasion of Japan.

A most ambitious scheme was put forward by Brunel about 1844. This involved a barrage which would have carried a railway and canal across the Severn from near Fretherne. The other major abortive scheme was a rail bridge at Aust designed by Thomas Fulljames, engineer of the Bristol and Liverpool Railway.

Mr. Rowbotham concluded by describing the construction of a Severn Trow and how these most versatile craft tackled the most arduous duties. The very shallow draught of the trows was obtained by having the keel inside and rounded bilges. In the Bristol Channel a keel had to hang under the trow. Every village had its own quay at which first merchandise, then coal and roadstone (when parishes were responsible for roads) were loaded and unloaded. Wherever trows had to tie up an inn was situated on the bank. These trows were built behind earth banks at all kinds of odd places.

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HISTORY OF PLASTICS - MR. R. ROSE.

Mr. Rose started by saying that the plastics industry was much older than most people thought, in fact it is 104 years old and has been in Stroud for over 50 years.

Previous to the introduction of plastics the manufacture of synthetic rubber was important as it gave much of its machinery to the plastics industry. The synthetic rubber industry started in 1820 with MacIntosh and Hancock and in 1836 Goodyear vulcanised rubber using sulphur. Next rubber moved away from the textile industry to manufacturing and in 1845 a rubber extruder was invented. Nearer this county, in 1847, Moulton bought a mill at Bradford-on-Avon and in 1849 installed rollers, and by this date was producing conveyor belts etc.

Mr. Rose then described the work of Alexander Parks who is called the father of the plastics industry. Born in Birmingham in 1813 he set up early in life as an inventor, wanting to use plastics as an electrical insulator. He became interested in cellulose acetate, which was used in Germany, and used camphor to produce an early plastic substance known as 'Parkosene', which gained him a bronze medal at the Great Exhibition of 1862. In 1866 the Parkosene Company was set up, with Bessemer also on the board, and this company mainly manufactured fancy goods, but after a time went bankrupt.

In America cellulose nitrate (celluloid) made its first appearance in 1869 but this substance was highly inflammable. Back in England, the British Xylonite Co. was formed in 1876 in London and principally made cuffs and collars. Later B.X. moved to Suffolk and is still there. Again in Europe, casein (dried milk curd mixed

with water) was used in Germany and in 1899 was treated with formaldehyde to manufacture non-inflammable buttons, insulators, etc.

The first of the thermosetting resins, Bakelite, was invented and the main property of this plastic was that it could not be softened. Dark brown or black, it was used for electrical fittings and in 1910 used for cars. Much later urea was developed and lighter colours were possible by 1930.

Just before the First World War a company was formed at Lightpill for the production of 'Erinoid'. This substance which was obtained from a German patent in rather mysterious circumstances, possessed the marbled colouring and texture which made it ideal for the production by machinery of buttons, fountain pens, knitting needles etc.

Mr. Rose then traced the development of the more modern plastics. Polythene, for instance, was first discovered in 1933 but it was not until 1938 that the first was made and the first production plant started on September 1st 1939. During the war it was used in radar. Perspex was patented in 1931 and used in 'planewindows'. By 1938 nylon was in production in America. Since then numerous plastics have been invented, each different in its own right.

The speaker concluded with a description of the plant and buildings which have been associated with the industry. He stated that machinery is scrapped ruthlessly; most of the original plant had already disappeared and it was vital that a study be made of existing plant before that in turn was superseded.

With regard to buildings the early factories were in buildings deserted by others. Then later some of the industry moved into standard factories but now much of the material is pumped round the factory and buildings are constructed around the equipment.

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LOCAL INVENTORS - MR. H.A. RANDALL

The first reference to a patent in Gloucestershire is dated 1736 and was granted to John Halls of Chipping Campden for designing a tow-boat powered by an atmospheric engine with a rear paddle wheel, connected by ropes to the piston. This seems to be the first attempt at steam navigation but there is no evidence that the boat was ever built.

Among other interesting patents was one taken out in 1756 by Samuel Wright, a Forest of Dean man, for a steam boiler with side flues. This was many years before James Watt's waggon boiler which was generally considered the first with side flues.

As might be expected there were numerous patents from people concerned with the cloth industry in the Stroud area. In 1748 George

Onesiphorus Paul, of Woodchester, took out a patent for dyeing scarlet in two stages, before and after milling. The specification gives ingredients of the dyes. An enterprising character, Nathaniel Watts, in 1787, patented a device with brass plates for making patterns for striped waistcoats. The difficulties involved in this seem to have limited further development.

Mr. Randall then referred to the local inventors of machinery connected with the cloth industry. It appears that John Lewis was not the inventor of the helical or rotary cutter although in 1815 he patented an improved cutter, far in advance of anything else before. Previously in 1793 an American, Daw, had taken out a patent for a rotary cutter with four straight cutters. Only 15 days after Lewis, Stephen Price of Stroud took out a patent for a shearing machine or helical cutter. Price was an engineer and his helical bars were cut. Another local invention was a new arrangement of cloth racks, a patent taken out by William Lewis.

In 1834 John Beard of Leonard Stanley patented a vertical gig mill with vertical teazles instead of the more usual horizontal. Although this took up less space, the horizontal type persisted. The last patent in this field was taken out by Charles Fletcher, a machinist of Stroud, in 1838; this was for a vertical loom where the warp thread goes up.

Other local inventors included Henry John Hogg King of Dudbridge who had many inventions to his credit including in 1868 calipers for measuring the thickness of pipes; a dynamometer; a self-binding reaper with Bomford (circa 1877) which proved to be too cumbersome; a bar testing machine; pressure scales and a micrometer of which two still exist (one is in Birmingham Museum). King started up a mill in Upper Newmarket and later in Newmarket itself where he made a sausage machine for Hilliers, but this may have been a copy. He also invented malting machinery which even today maltsters say they prefer to the modern electrical type.

It is well known that Edward Budding of the Phoenix Iron Works invented the lawnmower, but less known is the fact that he is credited with the invention of the shifting spanner and also different types of pistols. Mr. Randall said he had one of the original lawnmowers and also a model with Buddings name on the handle. In 1838 Budding went from Thrupp to Dursley to be manager for George Lister and here, in 1840, he took out patents for a carding machine.

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These notes on Stroud lectures have been compiled with the help of John Strange's articles in local newspapers.

Editor.

UNVEILING OF A PLAQUE AT BRIMSCOMBE PORT ON OCTOBER 29th 1966

The Society was fortunate in having a fine morning for this outdoor ceremony, the first of many it is hoped, at which many distinguished guests were present. Interest was added by a display of canal relics lent by Stroud Museum and also of paintings, prints and copies of documents, some loaned by the County Records Office.

Our Chairman gave us some of the history of the site and said that one of the Society's aims was to record and draw attention to local sites of industrial history by means of suitably inscribed plaques. We could not stand in the way of progress and a lot of industrial history was going to be swept away. The least we could do was provide something permanent on the site.

Mr. N.R. Collins, the County Planning Officer, next spoke. He said that in the great engineering undertakings of today the sense of urgency had been lost. When the canal and port at Brimscombe were built, teams of navvies worked round the clock to get the work completed. If Britain's motorways were built on the same basis - 24 hours a day with searchlights blazing - and other projects tackled with the same zeal, Britain would be a prosperous nation indeed.

After adding some interesting historical facts, Mr. Collins remarked that Messrs. Bensons had done much to improve the appearance of the area in which their factory was situated and then went on to refer to the campaign to tidy up the industrialised Stroud valleys, pledging the County Council's support. It was hoped to clear away the eyesores which destroy the overall appearance of these valleys. The County Council will give trees and also architectural and landscaping advice to industrialists.

The Planning Officer also said that it was necessary to preserve buildings of historic interest as well as to tidy up the valleys. In this work the G.S.I.A. and the County Council could work together. Neither of them was against change or progress, but the future should be tied to the past. He hoped that the only building now left with associations of the port, the old salt warehouse, would be preserved as well as the group of trees just in front of the factory site. These marked the island in the centre of the basin which was used for the storage of coal.

Mr. Collins then unveiled the plaque, which reads :

SITE OF
BRIMSCOMBE PORT
Headquarters of the
THAMES & SEVERN CANAL CO.
Incorporated 1783
HERE WERE OFFICES, WAREHOUSES,
CANAL BASIN AND WEIGHBRIDGE.
AN IMPORTANT TRANSPORT CENTRE
FOR OVER A CENTURY

Mr. P. Bennett, the Works Manager of Bensons Tool Works Limited, who had generously contributed towards the cost of the plaque, then got up to express the pleasure of his firm that the plaque had been installed. He assured us that history would repeat itself when the products of the factory went from the valley by train and road.

S U M M E R E X C U R S I O N S 1 9 6 7

Members will notice that our programme of excursions for 1967 is published somewhat earlier than in previous years. This is not to compete with the travel agents in the Sunday press and glossy magazines, but an attempt to minimise postage costs on circulars. I also hope members find the advance notice helpful in planning their summer activities to include the excursions that they wish to join.

Details have been included in the body of the Newsletter where they can be retained for future reference. Members are urged to complete the questionnaire at the end of this Newsletter and return it to me (the Secretary) as soon as possible. (New members should return their questionnaire immediately upon receiving the Newsletter). Members who do not return the questionnaire will not receive any further communications for the 1967 programme. On the other hand, do not ask for further details of any excursion unless you are definitely interested or you will defeat the principal object of the questionnaire.

SUNDAY 2nd APRIL - Half day trip to view remains of the Gloucestershire and Avon Railroad - led by our Chairman, Mr. C.H.A. Townley. By coach - 2 p.m. from Gloucester via Stroud to Mangotsfield. Return to Gloucester by 7 p.m.

The railroad, opened in 1832, ran from Mangotsfield to the river Avon - opposite Keynsham. At Mangotsfield it connected with the Bristol and Gloucestershire railroad. The two railroads were used to transport coal from the North Bristol Coalfield to Bristol and the waterway at Keynsham. Members will see the wharf, offices, weighbridge and stables; two long tunnels; large stone embankments and route up to Coalpit Heath.

COST - approximately 7/6d.

SATURDAY 15th APRIL - Afternoon visit to St. Mary's Mill, Chalford, led by Mr. L.F.J. Walrond.

The mill, originally a large cloth mill, is now the last stick mill in the district and possesses a fine steam engine.

SATURDAY 6th MAY - Whole day excursion. In the morning to Buckingham Townhall for a lecture and demonstration on a theatre/cinema organ by Mr. J.G. Stewart of the Theatre Organ Preservation Society.

Members will have an opportunity to see inside the organ chamber - a veritable one-man orchestra used to accompany silent films. In the afternoon we shall visit the British Waterways Museum at Stoke Bruerne. We also hope to visit other canal sites of interest in the area.

COST - approximately 17/6d.

FRIDAY 19th MAY - An evening walk on Leckhampton Hill led by Mr. D.E. Bick to see, amongst other things, remains of the tramroad.

SATURDAY, 3rd JUNE - Another steamer trip. This year from Tewkesbury up the river Severn through Worcester and onto Stourport on Severn.

During our stay in Stourport Mr. C.H.A. Townley will show us some of the town's associations with canals. Return to Worcester by steamer and thence by coach. Like the successful Gloucester and Sharpness Canal trip of 1966 we shall need at least 120 passengers. Members are invited to bring along their friends and it will be appreciated if members will indicate the number of tickets they are likely to require, when returning their questionnaire.

COST - ADULTS £1 , CHILDREN 10/- if accompanied by an adult.

FRIDAY 16th JUNE - An evening visit to the centenary exhibition of R.A. Lister and Co. Ltd. at Dursley.

Messrs. Listers hope to have several of their early engines on view, collected from all over the world as a result of their competition to find the oldest working Lister engine.

SATURDAY/SUNDAY 1st/2nd JULY - Two-day visit to Wales led by R. Bowen and K. Rattenbury.

This year based on Swansea and including the older Swansea Docks, copper works in the Landore and Morriston areas, canals and tramroads in Neath and Swansea and tinsplate works in the Neath Valley.

COST for weekend - approximately £5.

SATURDAY 29th JULY - A visit to sites in the Bristol Area of interest to Industrial Archaeologists. Led by N. Cossons, whose booklet of Industrial Monuments in Mendip, South Cotswold and Bristol Region is reviewed elsewhere in this Newsletter.

COST - approximately 12/6d

(NOT YET CONFIRMED)

continued overleaf

SATURDAY 9th SEPTEMBER - In response to many requests, the highly successful trip led by Mr. H.G.W. Household to see the fast disappearing remains of the Stroudwater and Thames and Severn canals is being repeated. By coach we shall traverse the length of the canals from Framilode to Inglesham. It is hoped to reprint the detailed notes on the canal originally published in Newsletter No. 2, for the benefit of members joining this excursion.

COST - approximately 12/6d.

DO NOT FORGET TO RETURN THE QUESTIONNAIRE AT THE
BACK OF THIS NEWSLETTER.

COLLECTION OF PHOTOGRAPHS

at MESSRS. T.H. & J. DANIELS, STROUD

When one of your Committee members, Mr. R.L. Rose, approached Messrs. Daniels for information on the Dudbridge Engine, he had the good fortune to find a collection of 1,200 photographic plates showing the factory from 1900 onwards and details of their numerous products. Mr. Rose and a colleague are now nobly undertaking the task of copying these plates, making a positive transparency (mounted on card) and a negative for our Society records.

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The following changes of address have taken place :

[Removed]

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[Removed]

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Interests

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* Family membership.

Total membership, 15th January 1967 - 169.

Of this number 44 are family members and 3 are juniors.

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