Pause for thought!

Every so often we are asked 'How is IA doing? is interest on the wane? or is the whole thing becoming played out? It is tempting to expect 'peaks' at regular intervals and if these seem thinner on the ground than was once the case, to assume that monotonv has set in and that the end is nigh.

But if one actually does pause for thought, stop to look beneath the more obvious 'surface' it can be quite heartening to see what is going on.

This month the Association for Industrial Archaeology is sending to those forty plus societies who have become affiliated to it, a Directory of local societies and kindred organisations.

This contains 21 pages of names and addresses (about 7 to a page) and gives details of some 150 organisations who feel that IA is a worthwhile thing. Our researches indicate that most local societies do not contain very many individual IA members and so adding these two classes of IA followers together, there are at a very conservative estimate around 6,000 - 'official industrial archaeologists' at large.

Add to this those who attend University Extra-Mural, WEA or LEA IA courses (but who will possibly never join a society), and the vast multitude who are quite easily persuaded to watch Anthony Burton or Kenneth Hudson on the 'tele' and at any one time industrial archaeology has a supporters club of around 100,000. Compare this with a few years back.

Despite soaring costs ... and the humble local authority evening class is no longer the bargain it was in the 1960s and early 1970s ... attendance at organised lectures is holding its own remarkably well.

The University of Bristol Department of Extra-Mural Studies has just started its 14th series of IA Winter Lectures with a predictably increased course fee. Despite a 700% increase in this fee over a period of 10 years (it is now £12.00 for 12 lectures) attendance is two and a half times greater than it was in 1972 and stands at a very satisfactory register level of 52. Admittedly this is a bit below the 1977/78 totals of 76 fee paying members but then the price was a mere £3.80 and unemployment and short-time working was a threat rather than a reality.

So we have every reason to feel satisfied at the 'grass-roots' support for a subject which most of us find difficulty in defining, but that is another discussion.

New look for the Old Furnace. A little over a year ago (Bulletin 8/3) we reported that the historic Old Furnace at Coalbrookdale was to be protected from further deterioration by the provision of a 'cover building'. This has now been completed and was officially opened by HRH The Duke of Gloucester in July 1982. The following account, together with two other interesting items, is taken from the Newsletter of the Friends of the Ironbridge Gorge Museum, by kind permission of the Editor, Barrie Trinder.

Old Furnace Building Opened. On Tuesday 27 July HRH the Duke of Gloucester visited Ironbridge to open the Old Furnace Building at Coalbrookdale. After arriving by air at RAF Shawbury, His Royal Highness paid brief visits to the Blasts Hill Open Air Museum and to Telford Development Corporation's re-development scheme at Jockey Bank before performing the opening ceremony at the Old Furnace Building. It was in the Old Furnace, Coalbrookdale, that Abraham Darby I first successfully smelted iron with coke in 1709.

The furnace was enlarged by Darby's grandson in 1777 to produce iron for the ribs of the Iron Bridge, and it remained in blast until 1818, after which it was incorporated in a complex of foundry buildings. In 1958 it was excavated and consolidated by Allied Ironfounders Ltd at the same time that the adjacent Coalbrookdale Works Museum was set up. The Museum and the furnace were handed over to the Ironbridge Gorge Museum Trust in 1970. The modern cover building has been constructed to prevent the continuing deterioration of the structure. Finance for the project was provided by the National Heritage Memorial Fund, the National Coal Board, the Department of the Environment...
the Manpower Services Commission and the
Ironbridge Gorge Museum Development Trust.
Work began on the building in the summer of
1981, and the first visitors were admitted in the
spring of 1982.

Old Furnace enigma Solved. The meaning of
the inscription cast on the oldest of the beams
of the Old Furnace at Coalbrookdale has long
been a mystery. The date now appears as
1638, but old photographs taken before the
beam was exposed to the weather in 1959 show
that it was then thought to be 1658. The
latter date could make rather better sense
since there is no documentary evidence that there
was a blast furnace at Coalbrookdale before
the Civil War. The lettering on the furnace is
similarly confusing. It has been suggested that
the ‘B’ may refer to the Brooke family, lords of
the manor of Madeley, but the nineteenth
century local historian John Randall thought
that the beam had been brought to Coalbrookdale
from the furnace at nearby Leighton, in which
case the ‘B’ could equally well have referred to
the Boycott family who were closely associated
with the works.

Professor J K Holtgen of the Institute for
English and American Studies at the University
of Erlangen, Nurnberg, who recently visited
Ironbridge, has put forward an explanation of the
inscription which seems thoroughly credible,
and has important implications for the history
of the ironworks. The inscription actually reads:

Professor Holtgen suggests that the ‘B’ with
the wavy line is a rebus (i.e an enigmatic
representation of a name or thing, using
figures or pictures instead of words or parts of
words). It indicates a ‘B’ and a brook. The
crown is a rebus for Basil, meaning a king. The
‘E’ stands for Etheldreda, daughter and heiress
of Sir Edmund Budenell of Deene,
Northamptonshire, whom Sir Basil Brooke had
married in 1605 . The inscription therefore reads:

Brookes, Etheldreda (and) Basil
1638 Etheldreda (and) Basil Brooke.

This is an explanation which seems entirely
acceptable. It confirms the date of the structure,
for whatever ambiguities there may be in the
reading of the letters, the Brooke family were
dispossessed of the ironworks during the
Interregnum and could not have built the
furnace in 1658. It must however remain a
possibility that the beam when first used was
part of the Brooke family’s steelworks, rather
than of a blast furnace. Professor Holtgen’s
explanation seems finally to dispose of John
Randall’s association of the beam with the
Leighton furnace. It is most gratifying that in
the year when the furnace has been preserved
in a cover building, one of its outstanding
mysteries should have been solved.

Old Furnace recorded. A full record of the
archaeological excavations carried out at the
Old Furnace during and after the construction
of the cover building is now available at the
Museum. It includes a full set of measured
drawings of the structure, and is entitled
Archaeological Recording at the Old Furnace,
Coalbrookdale, 1981-82. It was compiled by
John Maim, Archaeological Supervisor at the
Institute of Industrial Archaeology.

Old Furnace Wheel revealed. Almost every
industrial archaeologist or engineer who has
visited the Old Furnace, Coalbrookdale, has
speculated about the siting of the water wheel
which operated its bellows. During the final
stage of clearance work on the furnace prior to
the opening of the cover building, some marks
on the stone work on the west side (which must
have been visible since 1959) were noticed by
Bob Wilhelm of the University of West Virginia,
who spent the academic year 1981-82 in
Ironbridge. Removal of a little more soil
established that these score marks were indeed
made by a waterwheel, of approx 2.25m radius.

The Gold Mine Museum, Johannesburg One of
the tourist attractions in Johannesburg is the
Gold Mine Museum, centred around the No 14
shaft of Crown Mines. Visitors to the museum
may learn, in a special display, something of the
geology which gave rise to the prosperous gold
mining activity on which the wealth of
Johannesburg was founded, and they can walk
through re-assembled company housing furnished
in the style of the turn of the century. There is
a large model of the surface buildings at a
mine, which explains the whole process of ore
treatment, and a melt shop where an audience
supplying air into the workings. It has two
cages in separate compartments worked by the
original steam-driven winding engine. Nowadays
visitors are taken by a guide along the number 5
level, where various displays of equipment, old
and new have been arranged. One of the more
impressive moments comes when the guide
asks visitors to turn off their lamps, and a
worker up in one of the stopes demonstrates
the old method of hand-drilling using a
hammer and drill steel, working by the light of a
single candle.

One of the miscellaneous items of equipment
mounted in the museum grounds is an ‘air
calibrating machine’. As a nearby notice explains,
this was originally installed at the Ferreira Deep
Mine in 1904, when the mines purchased bulk
compressed air from the old Victoria Falls and
Transvaal Power Company (later to be
incorporated into South Africa’s national electricity
supply company, ESCom).

The bulk suppliers fed compressed air into a
main which served Consolidated Main Reef, City
Deep and Crown Mines, to ensure they were
getting what they were paying for, the mines
decided to install a system to measure the
quantity of air they consumed. A machine to
measure the air was designed by engineers at
the Rand Mines, who sent the drawings overseas
to Fraser and Chalmers, of Erith, Kent (now
incorporated in part of the GEC group as GEC
Mechanical Handling). The completed mechanism
was shipped out to the Reef and erected, where
it obviously served its purpose successfully for

many years.

Tony Bewis
Mining Magazine

Flying Boats. The Sandringham flying boat
Southern Cross is being restored at HMS
Dandalus, Law-on-Solent.

The Southern Cross, built in 1943 at
Short Bros’ Rochester works as a Sunderland
MK III, with Bristol Pegasus XVIII engines.
It did not serve in the RAF but was held in
reserve at Wig Bay. After the war it was taxied
across the Irish Sea to Short’s works at Queens
Island, Belfast, to be rebuilt as a Sandringham
MK IV, the engines being replaced by
American Pratt & Whitney Twin Wasp R-1830-90C
also a lack of volunteers. The latest development concerns its eventual resting place, as Southamptons Mitchell Museum, which is to be relocated in a new building near the Itchen Bridge, has been suggested by the restoration group. And a flying boat is not exactly a small item, so this would involve a much larger building than originally planned with an equally larger cost — £120,000 instead of £70,000. A third 'old' for display has come from Rochester, where it was built. The decision on its future is expected soon.

Southampton University IA Group

Early Tunneling in Clay. The Monthly Magazine

for November 1812 states that 'The new sewer now excavating in Hyde Park is one of the greatest works of the kind ever attempted in this country. It is intended for a drain to the numerous streets now built in the neighbourhood of Paddington, and will empty itself into the great sewer which enters the Thames at Milbank. In consequence of the height of the ground in Hyde Park, it became necessary in order to ensure a sufficient fall to this new sewer, to dig to a very great depth; and its formation is carried on by the laborious and expensive process of tunneling. Pits are sunk at the distance of every seventy yards, and the excavations are conducted in a very similar to those in a coal-mine. The stratum of clay through which the sewer passes is favourable to the process of excavation, and is similar to that which was thrown up in the formation of the Highgate Archway, which so recently failed on nearly arriving at completion. The gravel pits in Hyde Park are filling up with the clay dug from the tunnel'.

The reference to the failure at Highgate Archway concerns an even earlier tunnel through the London Clay, made in 1808-09 where the new by-pass road was carried on by a tunnel through the hill for a distance of about three hundred yards. This great undertaking was completed in the latter part of 1809, and the tunnel, 24 feet high and 22 feet wide, was arched with brick. But on the morning of 13 April 1812 some of the brickwork gave way. About noon the ground above the tunnel was seen to crack and settle, and during that and the following day the whole arch, which had been carried for a distance of 130 yards, fell in. Not a single person was injured, although on the preceding Sunday several hundred people had visited the works out of curiosity'. I am indebted to Stephen Cross of the National Monuments Record for this reference (from H P Clurn's The Face of London, 1951, in response to my enquiry in an earlier AIA Bulletin about early road tunnels. Although not the earliest constructed, it of 1823 at Reigate (through sand) still has a claim to be England's earliest surviving road tunnel, as the collapsed one at Highgate was widened out to an open cut, Hornsey Lane being carried over by the famous archway. Although extensive and deep tunneling, with or without working shafts was by this time a well-established technique in mines and canals in the hillier parts of Britain, the development of tunneling techniques in the softer and more mobile rocks of the south-east called for the development of new skills. Were these London and south-eastern tunnels the work of contractors who already had tunneling experience in more favourable rocks further north and west?

Between 1807 and 1809 the civil engineering contracting partnership of William John Jolliffe and Edward Banks (1807-32) was responsible for the making of an ambitious drainage adit for an underground stone quarry at Marston in Surrey. Although tantalizing little is recorded about this structure, it appears to have been of the order of 500 or so yards long, made inclined gently upwards through Gault Clay without too far as is known any intermediate working shafts, so as to dewater a flooded underground quarry. Jolliffe's training was as a curate, but Banks was a Yorkshireman with considerable civil engineering experience behind him by this date, who had been concerned amongst other works with the 3% mile Marden tunnel under Standedge. Interestingly, the partnership undertook some work, believed to be trial borings for Marc

Brunel in connection with the making of his Thames Tunnel in 1824-42 (the contract was worth £486). Whether the 'North Hyde Works' (for £931) for which they are also known to have been responsible had any connection with the Hyde Park Sewer is not known.

Paul W Sowen

IA News from Sussex. The following two items are reproduced from Sussex IA Society Newsletter 35, July 1982.

The Glynde Telpher Line. Two members of Sussex IA Society, R F Jones and E W O'Shea, have produced information about the Glynde Telpher Line, and found relevant articles Mr E F Carter in 'Design and Components in Engineering' for October 6th, 1971.

It appears that a Dungeness man, Professor H Fleming-Jenkin, first experimented using electricity for operating such a telpher line and in 1883 an experimental line 700 ft long was built near Ballock, Herts, followed by a similar installation at Millwall Docks in 1884. The first commercial installation, however, was that at Glynde opened in 1885 and which ran for over a mile from rail sidings at Glynde station to pits in the gaunt clay on the estate of Lord Hampden, then Speaker of the House of Commons. The skips ran at 5 mph on steel rods forming 'up'.
and "down" tracks supported 18 ft above ground on T-shaped structures at intervals of 66 ft. Details of the electric drive and control arrangements are somewhat vague but it was possible to handle 300 tons of clay per week.

Mr O'Shea has permission from Mrs Joyce Crow, the Hon Librarian of Barbican House, Lewes, to make further copies which will be available to any interested members at cost (25p).


Early electrical power development was bedevilled by poor legislation, the Electric Lighting Acts of 1882 and 1888. One result was a rather tedious battle between municipal and private enterprise. Brighton Corporation was no exception and after some vacillation set out in 1890, to attempt to capture this lucrative new market by building their own power station in North Road, almost opposite Reed's Iron Foundry. Alarmed by this competitive threat, the Brighton and Hove Electric Light Company responded by notifying its customers that they must sign a 3 year contract for supply or be cut off. Although three quarters of the company's customers signed, the measure was only of temporary assistance as on the 2nd April 1894 in the face of increasing competition the company was taken over by the Corporation and paid £5000 for the goodwill of their business. Arthur Wright, the generating station manager and engineer, became the municipal concern's Station Superintendent.

The municipal power station opened in 1891 and inconveniently chose direct current which Wright had abandoned 3 years earlier. The original plant consisted of 3 coal-fired Lancashire boilers (7 ft dia x 27 ft long) operating at 150 lb/ft² and 4 Williams-Goeden generating sets. It must have been hard and thirsty work in the power station as a local publican was allowed in three times a day to take orders for beer, tobacco, fish and chips. By 1904 the generating station had considerably expanded, taking in adjoining properties in North Road and Bread Street and having 6 Lancashire boilers, 10 Babcock and Wilcox boilers, 15 Williams and Robinson engines direct coupled to 15 dynamos made by Electric Construction Company and Bruce Peabody generating at 115, 230, 460 and 550 volts, feeding a network of 70 miles of street cables.

By 1899 it had become clear that in order to meet the anticipated demand which had increased from 867,494 units in 1895 to 4 million units by the end of 1899 a new station would have to be built and a 10 acre site on the eastern arm of Shoreham Harbour at Southwick was purchased. Arthur Wright was appointed Consulting Engineer and construction began in 1902. The station was officially opened on 16th June 1906 and allowed the North Road plant to be closed as a generating station in 1908; although it is still being used as a sub-station (if one climbs to the highest level of the multi-storey car park at the top of North Road the brick base of the boiler house chimney can still be seen).

Brighton Corporation was a large user of the electricity it produced. Until 1906 it ran one of the few municipal telephone systems in Great Britain (selling out in that year to the GPO for £49,000). From 1901-1939 municipal trams were operated on a 3ft 6 inch gauge and pioneer trolleybus experiments with a rather hefty 40 seater, which trundled along Preston Road, were carried out in the winter of 1913-14. The well-loved red and cream trolley buses taking over from the trams in 1939.

J S F Blackwell

Thwaites Mills, Near Leeds, a review of a vintage year: 1981. The year started well with the first grant offer from the Department of the Environment of some £7,000 towards the cost of roof repairs and the purchase of scaffolding and materials. The Department of the Environment letter offering grant referred to the Mills as a 'remarkable survival', "the mills contain a very rare, if not unique collection of waterpowered equipment for the manufacture of putty and whitew'. Despite this, the provision of long term access to the mills was under discussion because of the plan by the British Waterways Board to widen the canal immediately adjacent to the Mill thus destroying the present road bridge.

Early in 1981 the carpentry section of the project was approved and the workforce to date largely recruited from the Hunslet/Belle Isle/Middleton area consists of a Senior Supervisor, three Supervisors (Building, Engineering and Carpentry) and 20 labourers. A great deal of work was accomplished — much of it now unseen, as for example the reconstruction of the masonry tunnel water outlet from the main water wheel. A considerable area of stone sets were laid, diesels stripped, repaired and re-assembled, a new 240 volt generator fitted, the house almost rebuilt from roof to cellar. As part of the restoration programme the Mill race was dredged vastly improving the visual impact of the mills surroundings.

In the Engineers shop drilling and grinding machines were stripped and painted, two lathes repaired, the forge and its blower brought to working order.

A comprehensive programme of building and carpentry was followed — all internal windows and doors being replaced in the mill house, brickwork pointed and stonework replaced. The garden wall was reconstructed. Throughout the mill silts and lintels are being replaced. Drainage from house and mills has been improved.

MSC support for 1982 was confirmed and an enlargement of the programme to include specialist groups for painting and decorating, landscaping and technical activities is confidently anticipated. DoE has offered grant towards the cost of materials to a maximum of £10,663. The County Council gave grant in support of the scheme of £5,000 in 1981/82 and £25,000 in 1982/83. The County Council also now sponsor the Community Enterprise Programme.

Of the many visitors to the site the Inland Waterways Association rally in August 1981

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**Thwaite Mills Location Map**

**SE 328312**

- **City Square, Leeds City Centre**
- **City Station**
- **Follow signs for Wakefield, Castleford, Pontefract**
- **Hunslet Canal**
- **R Aire**
- **Thwaite Mills**
- **Traffic lights**
- **Weddingtons**
- **Remains of viaduct**
- **Storton**
- **M1 Junction 43**
- **A639 Pontefract**
- **A61 Wakefield**

**Scale**: 0 - 1 mile

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- **City Centre**
- **A639**
- **A61**
- **Wakefield**
- **Thwaite Mills**
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**A639 Pontefract**

**A61 Wakefield**

**Scale**: 0 - 1 mile
produced a flood of enthusiasts. The interest shown by the Association’s members and their guests demonstrated the considerable appeal of the Mills which has been echoed many times by other groups and individuals.

Thwaite Mills was featured in an MSC film produced to encourage new sponsors of Community Enterprise programmes and recently a section of a BBC TV film ‘A Future for Yorkshire’s Past’ described and illustrated the very special character of the Mills.

Throughout the year the Society continued its relationship with the Northern Mill Engine Society. The (inverted triple expansion) ‘Shipley engine’ from Firth Brothers and the ‘Denby Dale’ engine, a vertical cross compound from Dearsmile Mill are now on site. A third engine is expected and NMES are actually searching for a boiler to drive these. Plans are being prepared for the engines to be displayed in a purpose-built engine shed. Recent proposals for the removal of the Raymond Mill would if implemented, free the mill engine house and boiler house of 1930s machinery and gearing.

The provision of a suitable replacement engine and boiler is under active consideration.

The last surviving ‘Bottle Kiln’ in the North East are now open to public view. They form part of the Old Pottery which was formerly Walker’s Works on Milkwel Lane, Corbridge, and they are now a Scheduled Ancient Monument in the care of Tyne and Wear Industrial Monuments Trust.

This site is one of the once numerous rural potteries of Northumberland which concentrated in agricultural products, drains, roofing tiles and firebricks made of local clays. Although it went out of use around 1906, it is exceptionally well preserved. As well as the Bottle Kilns, it includes a Circular Downdraught Klin, some Newcastle Kilns, extensive heated Drying Floors and manufacturing sheds, and the remains of a water-powered Pug Mill.

The name ‘Bottle Klin’ derives from the shape of the structure and not its function. Nor is it really a klin, but the structure which surrounded both the kiln proper and its working area, and provided also a draught for the fire by acting as a tall chimney. The inner kilns themselves have been long since removed from the two on this site, but remains of one have been identified in an archaeological excavation conducted recently. This type of kiln is more usually associated with the production of finer wares, and there were many on the lower reaches of the rivers Tyne and Wear at one time.

Public access is to the Bottle Kilns alone, as the rest of the structures lies within the private garden of a dwelling house. Visitors are asked not to trespass from the marked path, but from it many of the other features can be clearly seen. The kilns are open to view between 9.00 am and 4.00 pm daily, and occasionally at other times by appointment. There is no formal admission charge, but any donation made to the Trust will be gratefully received.

To find the site which lies near OS Grid Ref NY 992 652 proceed from the centre of Corbridge NE along the B6321 (towards the Military Road) about ½ mile. Shortly before the 30 limit end, turn left along Milkwel Lane, past Milkwel Farm, to the Pottery, which is on the right just before the bridge under the bypass road.

For further information, please contact the Trust at Sandyford House, Archbold Terrace, Newcastle-upon-Tyne NE2 1ED.

New Scheme at Limehouse.

Half of the existing 4½ acres of water-space at London’s Limehouse Basin will be retained as amenity area if a redevelopment scheme accepted by the British Waterways Board obtains the necessary planning permission from the London Docklands Development Corporation. Now that commercial shipping traffic has deserted the Basin, once an important transfer point between the River Thames and the Regents Canal, giving access to the whole of the Grand Union canal system, it is intended to provide 600 homes, large areas of shop and office space, a hypermarket and two restaurants, one of which will feature a clock tower to provide a visual focus. The main buildings will be sited around the perimeter of the dock, with some houses on artificial islands founded on a grid of piles. Lightweight building materials are being sought so as to minimise the size and cost of the foundations.

Every house and flat will have a view over the basin or the Thames. The developers Hunting Gate Group have promised to include a marina for canal and sailing boats and a boathouse and workshop for youth boat club. The basin is adjacent to the northern entrance of the Rotherhithe Tunnel and to BR’s little-used Stepney Green station, and will be convenient for the new light railway system that is proposed for Docklands. A runner-up in the competition organised by British Waterways for redeveloping the site was a scheme put forward jointly by Nicholas Falk of Industrial Buildings Preservation Trust featuring a transport museum, which for years has provided an unofficial focus for interesting old vessels including an ex Admiralty steam VICT. A tender and various privately-converted Dutch and Belgian canal barges. This scheme would also have provided a venue for a working steam railway, utilising the existing line that_May_associating_interesting_vessels_on_the_site_on_a_viaduct. The winning Hunting Gate plan makes no specific mention of preserving any historic features of the area’s transport history, although initial design studies prepared with planning applications in mind suggest a mimetic of early 19th century commercial buildings closely reminiscent of those at St Katherine’s Dock a few miles further up-river.

With planners now giving some priority to the notion of ‘heritage’ in making a new residential and commercial development marketable it seems likely that they would welcome a historic transport ingredient in this proposed new development. But if owners of historic vehicles and ships are to be induced to provide such an attraction at Limehouse Basin, they will need to be reassured that there will not be a repeat of the sequence of events at St Katherine’s, where owners of vessels moored there initially in anticipation of a preferential rental have later seen their annual charges hiked up to a level where the incentive for them to provide a pleasing vista for those living in the adjacent private flats has altogether disappeared. We hope that the promoters of the Limehouse scheme will appreciate the contribution to the local environment that a historic transport collection could make, for there is no shortage of owners who would be willing to provide exhibits if the annual charges and security could be made attractive.

Foxton Inclined Plane. In July 1896, the Grand Junction Canal Company decided to build an Inclined Plane Lift at Foxton, Leicestershire, to provide a quick and easy method of transporting boats from the lower level of the canal to the higher. Tenders were received for the job, and it went to Messrs J & H Gwynne and Co of Hammersmith, who tendered £14,130 and in 1898 construction began.

One man was killed in the construction of the Lift: Mr George Robinson, a navvy, who was killed by a fall of earth. (From the Parish Records.)

The completed Lift was opened on July 10th, 1900, at a cost of £37,500 including the land.

Each moveable dock was built of steel plates and mounted on eight sets of wheels running on four pairs of rails.

The gradient was 1:4. Each dock measured 80 ft x 15 ft inside, and was capable of accommodating two 35 ton narrow boats or one 70 ton barge. The docks were connected by steel wire ropes of 7" circumference, passing round guide pulleys to the hauling drum.

Consequently, when one dock ascended the other descended, thus balancing each other, the engine being there to overcome the friction of the moving parts.

The engine for driving the main hauling drum working the plant was of the double-cylinder high pressure jet condensing type, motion being transmitted to the drum by means of a powerful worm gearing. There were two boilers of the Lancashire type, although one was sufficient power to produce the necessary steam pressure, the second being merely a reserve.

In order to cut down manual labour costs as much as possible, the gates of the docks were raised and lowered by hydraulic power obtained from a horizontal duplex pump.

The pump delivered into an accumulator sufficiently large to hold a reserve of water to work all the necessary cylinders simultaneously.

A Typical Journey Through the Lift. A vessel wishing to ascend would arrive at the bottom and proceed into whichever dock happened to be at the lower level, by the raising of a gate at the end of the dock, the water level in the dock being the same level as that in the canal. The gate was then hydraulically closed and the dock containing the floating vessel hauled up the slope. On arriving at the top the two hydraulic rams would push the dock against the upper canal and form a water-tight seal.

The gates at the end of the canal and the dock were simultaneously raised and the vessel
proceeded on its journey.

The time taken to pass either one or four boats was eight minutes (in motion). The complete operating time from start to finish was twelve minutes against the average time of 45 minutes to negotiate the locks.

The potential capacity was 70 tons in either direction ie 8,400 tons per 12 hour day, or approximately 2.5 million tons per year.

Three men were permanently employed on the lift, one stoker in the engine house and one to operate each set of gates. The cost of working including the labour was estimated at 1/20 penny per ton.

The Foxton Inclined Plane Trust hopes to restore the lift to working order, and is actively engaged on the reconstruction of the

of 11 aircraft including examples from the former Manchester firm of A V Roe and Co who began manufacture (1910) in part of the Brownfield Mill off Great Ancoats Street. Avro’s former factories at Newton Heath and Chaderton are occupied by the CWS and British Aerospace respectively.

A historic Lancaster bomber many of which were built at Chaderton and assembled at Woodford will go on show at the museum. Other planes will include a Hawkew Hunter and Westland helicopter. The aeroplane collection will provide a replica of the 1909 Avro tri-plane (the original is in the Science Museum aeronautical collection) and an Avro Avian built at Newton Heath in the 1920s, (see ‘Preserved Aircraft’, P R March)

Exhibits which are of related interest will be on view at Liverpool Road Station such as the Merlin engine from a Spitfire and later jet engines. Inevitably some of the preserved aircraft will not find a space such as the Vulcan Bomber recently returned to Woodford of which all 136 were built at Chaderton and entered service in 1956.

The Manchester Aviation Society may be contacted through Chris Walkden 3 Dennison Road, Chedle Hulme and The Aeroplane Collection through Brian Robinson (author of a History of Aviation around Manchester) at 9 Brackley Road, Heaton Chapel. A booklet on Motor Museums and Aircraft Builders to (1919) by A D George is obtainable from Mrs A Meskin, Department of General Studies, John Dalton Building, Manchester Polytechnic, Chester Street, Manchester M1 5GD.

Another Early Road Tunnel? Liverpool Corporation Quarry in 1774. Notes in previous issues have commented on early road tunnels in England, and sought earlier examples. At present the ill-fated Highgate tunnel of 1809 (it collapsed in 1812 and was widened out into a cutting with overbridge) appears to hold the record as the earliest known road tunnel in the country, with that at Reigate (1823) as the earliest surviving such tunnel. But of course it is a matter of definition. Robert Morris’ diaries (Radical Adventurer: the Diaries of Robert Morris, 1772-74 ed by J E Ross, Adams & Dart, 1971, pp 181-82) mention, in the entry for 22 May 1774, what may be a contender for ‘earliest road tunnel’ status:

‘I took a walk up ye Hill, where the [Liverpool] Corporation Quarry is, which I suppose is as grand as any quarry in Europe: There is a road into it under ground, with large Tunnels for Light: In ye Quarry is a sea spring, though but weak in quality, with persons to serve you to it: There is a grand view of ye River & Town & Country from ye top of ye hill . . .’

Naomi Evetts of the Liverpool Record Office has kindly supplied the following comments and information, which members may be able to supplement:

‘The quarry was an open one and the earliest mention of the underground road I can find appears in Enfield’s History of Liverpool, 1773, as ‘The entrance to the quarry is by a subterranean passage, supported by archways . . .’ A letter published in the magazine Kaleidoscope, July 10th, 1821, states that the Corporation were blocking up the subterranean entrance at Duke Street. In the latter part of the 18th century, the site of the Quarry was laid out as

public walks and gardens and in 1829 St James’ Cemetery was opened there. The Anglican Cathedral was built on part of the site and the Cemetery was finally closed in the 1930s and today the gravestones have been removed and the grounds laid out as gardens. A view of the windmill on The Mount which shows part of the Quarry and what appears to be the entrance to the tunnel appears in Pictorial Relics of Ancient Liverpool by W G Herdman, 1843. Two small engravings taken from inside the tunnel looking outwards give some idea of the scale and show the roof and walls to be made from blocks . . .’

‘An article entitled St James’ Mount, Liverpool, by R T Bailey was published in the Transactions of the Historic Society of Lancashire and Cheshire, Vol 97, 1945 pp 101-105. The author states that there had been a quarry on that site since “time immemorial” and that there were two entrances into the quarry, a cartway at the south end and a “subterranean tunnel commencing at the junction of Duke Street, Rodney Street and the north end of St James’ Road. This tunnel had two eyes to admit light and air, and on each side over the entrance was the figure of a lion, carved in stone. This entrance is now filled in, but the tunnel may be seen from the cemetery’. (Although published in the 1945 volume the article was written in 1916.) The information possibly came from an earlier book Liverpool as it was During the Last Quarter of the 18th century, 1853, which gives similar details.’

So it appears this tunnel was probably first made as a part of the quarrying operations, and only on their cessation was turned over to public use for access to the spa and ornamental grounds. Whether it accommodated, or was large enough to accommodate, vehicular traffic, and whether it should really count as a road tunnel on a public highway, remains to be determined. Possibly members may be able to provide further information on this interesting structure or others like it?

Paul W Sowan

Dockland Development. Freehold of Liverpool’s derelict Albert, Salthouse and Canning docks was handed over to Merseyside Development Corporation on May 24th by Mersey Docks & Harbour Company. Clean up of the warehousing, much of it grade one listed buildings, is underway and contracts to dredge and restore the docks themselves will follow later in the year. The adjacent Merseyside Maritime Museum will use some of the facilities with the future of the remainder of the complex as yet undecided.
This is undoubtedly one of the largest surviving suspension wheels in the country and to restore it and install it in the wheel chamber at Styal is the subject of a major programme at Quarry Bank Mill. This includes the restoration of the mill pool, weir, headrace and tailrace. The mill has also been able to acquire the iron needed, governor and some of the mill work from the Glasshouses mill, all of which will make an appropriate and relevant setting for one of the few surviving objects (and the last surviving wheel) made by the greatest mechanical engineer of the Victorian period.

The mill still needs to raise a further £65,000 to restore the ironwork, cast a new shaft using the original pattern, and restore the wheel chamber and water power systems. Visitors to the mill this year will see work in progress in the wheel chamber and an introductory audio-visual programme and exhibition. Meanwhile the broken shaft dwarfs their cars parked on the mill car park.

The Mill Trust is researching the Glasshouse sites and has noted the existence of numerous suspension wheels on other sites. David Sekers will be grateful to hear from AIA members who can give information and locations of other suspension wheels (whether surviving or replaced or removed) to help compile a register. Information and (of course) any contributions to the Mill’s appeal will be most welcome.

Please write to David Sekers, Quarry Bank Mill, Styal, SK9 4LA.

Industrial Archaeological Records in Wales.

The National Monuments Record for Wales at Eddleston House, Aberystwyth, Dyfed, SY23 2HF Tel 0970 4381 or 4382 has record-cards for over 4,000 Industrial Archaeological sites in the Principality together with many photographs, plans and survey drawings of remains. Such records are exchanged with the British National Archaeological Record of the Ordnance Survey and with the Archaeological Trusts in Wales. The channelling of information via the latter helps to ensure that provision for the preservation of important sites by local councils and other government institutions is made and that selected sites can be archaeologically excavated if threatened. The survey of known sites under threat is carried out by ourselves. It is also hoped to exchange records with the Department of Industry at the National Museum of Wales Cardiff and with other institutions.

We are continually adding to the record and we would be very pleased to hear if you have any information about an industrial site in the form of information, photographs, plans and/or site drawings. We are also interested in your own comments or criticisms from anyone with an interest in the subject: write to Jeremy Godbolt, 6 Mendip Road, Oakham, Leics LE15 8NN.

Suspension Wheels and Styal.

Quarry Bank Mill, Styal, was the site of one of the first iron suspension wheels designed by Thomas Hewan, the Manchester millwright. The Museum in the making, run by an independent charity, as tenants of the National Trust, has embarked on a major project to restore water power to the site. The 100 horse power prime mover installed as early as 1818 was dismantled at the beginning of this Century and plans are now underway to bring back to the wheel chamber a wheel of similar design and proportions.

The mill has in fact now acquired a wheel built in 1850 by William Fairbairn of Manchester, which is 24 feet in diameter and 226° wide. It comes from the old flat mill at Glasshouses near Pateley Bridge, where it had stood since the shaft cracked some twenty years ago.
The Society for the Protection of Ancient Buildings. Founded in 1877, this Society produces a wide range of information sheets on the repair of ancient buildings. Technical pamphlets published include: Outward leaning walls, Strengthening timber floors, Chimneys in old buildings, Cleaning stone and brick, Fire safety in historic buildings and Treatment of damp in old buildings. They have also published a book entitled "The repair of ancient buildings" by A R Powys priced at £6.00. Another recent publication is the SPAB Barns book which covers all aspects from landscape value and history, construction and materials, planning and conversion, priced at £22.20 this volume is extremely good value and gives many hints as to the way in which old agricultural buildings can be re-used. All these publications are obtainable from The Society for the Protection of Ancient Buildings at 55 Great Ormond Street, London WC1N 3JA.

Affiliated Societies. Secretaries of the 44 local IA societies now affiliated to the AIA will shortly be receiving a mailing from Marilyn Palmer, Local Societies Liaison Officer, including the minutes of the Working Weekend held at Ironbridge in March 1982, the meeting in London during the AIA Conference and a questionnaire which it is hoped secretaries will complete so that AIA can establish the members to what extent and what local societies would like to see the AIA doing for them. The AIA Lecturers Panel list has now been published and will also be sent to affiliated societies. Individual AIA members can obtain copies from Stuart Smith at Ironbridge. 60 AIA members are listed, with an indication of topics on which they can speak, type of audience, distance prepared to travel, whether a fee is required etc. The Liaison Officer also holds a list of members of the Chirch Tramway Museum Society who are prepared to lecture to IA societies. Both lists will be updated from time to time and amendments should be sent to the Liaison Officer.

The Working Weekend, March 25th-27th, 1983 will follow last year's pattern of three business sessions, which will consider (i) society activities — publicity, membership recruitment, regional conferences etc, (ii) field activities — recording, surveying, excavating, storage of records and (iii) preservation activities — re-use of buildings, use of MSC, opening sites to the public etc. Social activities will be included and a slide show of IA overseas is planned as an after-dinner session. Stuart Smith has kindly offered to organise accommodation in Coalport which should have central heating by then, and also to book Society representatives into the excellent overnight facilities which the Ironbridge area can offer. A booking form and details will be sent to societies at a later date.

Society Activities. Sussex IA Society is organising a short course on practical surveying for archaeology, beginning with a study day at Newhaven on December 4th, 1982. Field work on Sundays in the New Year will include chain and plane table surveying, use of the optical square, levelling and contouring. Information from Mr E W O'Shea, 14 Pelham Terrace, Lewes, East Sussex BN7 2DR. Gloucester IA Society were the guests of the Oxford House (RISCA) IA Society for an excursion to the Newport area and the Severn Darenbys, while Nottingham IA Society were the guests of the Wrocester and District IA Society for a visit to Stourport-on-Severn. Addresses of IA societies can be found in the AIA Directory of Local Societies and Kindred Organisations, available now from Ironbridge.

The Research Group of the Leicestershire IA Society has recently completed a book with extensive gazetteers on the IA of Leicestershire, to be published by Leicestershire Museums early in 1983 as part of their series on the present state of archaeology in the county. The ending of the Batsford IA series means that such work is now very much in the hands of local societies, a point which will be discussed at Ironbridge next March. Birmingham Railway Museum have written an interesting account of their experiences with MSC schemes and this will be published in a future Bulletin.

Marilyn Palmer, Local Societies Liaison Officer

Bulletin Inserts. In an effort to keep down the AIA subscription the Council tries to generate income by sending out advertisements with the Bulletin. The cost of inserting leaflets with the Bulletin varies from 3p to 10p depending on the size of the insert and the membership secretary is keen to know of societies or suppliers who may wish to avail themselves of this opportunity. At present the membership of the Association is approximately 800 and this is very cheap form of distributing information to a specialised group of approximately 800 people. Further details from the Membership Secretary.

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