

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 monotony 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 AIA 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 75 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 Blists 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 1959 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 K J 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* (ie an enigmatical 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 Brudenell of Deene, Northamptonshire, whom Sir Basil Brooke had married in 1605. The inscription therefore reads:

Brooke, 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 Malam, 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



Headframe of No 14 shaft, Crown Mines Museum.

may sit and watch a standard gold brick being poured.

The highlight of any visit is a trip underground. Visitors are kitted out with overalls, safety helmets and cap lamps prior to descending the No 14 shaft to the No 5 level, at a depth of 220 metres. The circular brick-lined shaft was completed in 1918 and is actually over 1000 metres deep. Supplementary shafts elsewhere in the mine carried the former workings down to a total depth of 2000 metres. All ore from the mine used to be hoisted up Crown Mines No 5 shaft, situated about 2 kilometres north of the museum.

The No 14 shaft was used for hoisting men and materials, and as a ventilation shaft,

many years.

Tony Bewis
Mining Magazine

Flying Boats. The Sandringham flying boat *Southern Cross* is being restored at HMS Daedalus, Lee-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

engines. The craft went to Tasman Empire Airways Ltd, where it was known as a Dominion Class flying boat (later Tasman Class), being delivered in 1947 as ZK-AMH names 'Auckland'. In 1949 it was sold to Barrier Reef Airways with the Australian registration VH-BRC, and in 1952 to Ansett's, working with Excalibur on the Sydney-Lord Howe service, when it was known as 'Beachcomber'. It was sold to Antilles Air Boats in 1974 to carry inter-island passengers in the Virgin Islands, being re-named 'Southern Cross' with the American registration N158C. Two trips were made to England when Captain Charles Blair piloted it and passenger trips were made. After his death the airline lost interest in its flying boats and it lay derelict at Puerto Rico. It would have been scrapped had it not been for Capt Ron Gillies, who flew it for 28 years. He set about rescuing it and after a series of problems it eventually arrived at Calshot on February 2nd, 1981.

The aim was to fully restore the flying boat and take passengers for a few years until retiring it to a museum. The facilities at Calshot were limited and 'Southern Cross' was moved to HMS Daedalus in July 1981. However, funds were nowhere near target and the Science Museum stepped in and bought it. The volunteers were given until September 1982 to complete the work, or it would be taken to the museum's annexe at Wroughton, near Swindon.

The possibility of it ever flying again is almost nil, not only through lack of cash but

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 Millbank. 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 tunnelling. Pits are sunk at the distance of every seventy yards, and the excavations are conducted in a way 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 suddenly failed on nearly arriving at completion. The gravel pits in Hyde Park are filling up with the clay dug from the tunnel'. Is the tunnel, of the order of two miles in length still in existence? Is anything further known about how and by whom it was made?

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

claim to be England's earliest surviving road tunnel, as the collapsed one at Highgate was widened out to an open cutting, Hornsey Lane being carried over by the famous archway.

Although extensive and deep tunnelling, 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 tunnelling 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 tunnelling 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 Merstham in Surrey. Although tantalizingly 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 so far as is known any intermediate working shafts, so as to de-water 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 3/4 mile Marsden tunnel under Standedge. Interestingly, the partnership undertook some work, believed to be trial borings for Marc

The Fraser and Chalmers 'Air Calibrating Machine'.

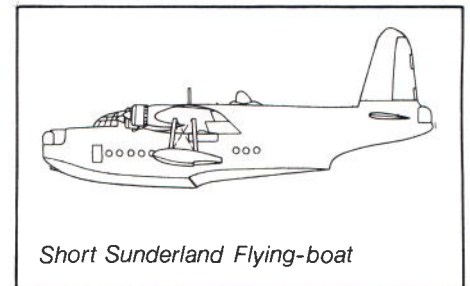


also a lack of volunteers. The latest development concerns its eventual resting place, as Southampton's Mitchell Museum, which is to be relocated in a new building near the Itchen Bridge, has been suggested by the restoration group. And a flying boat is not exactly a small item, so this would involve a much larger building than originally planned with an equally larger cost - £120,000 instead of £70,000. A third 'bid' for display has come from Rochester, where it was built. The decision on its future is expected soon.

Southampton University IA Group

Early Tunnelling in Clay. The *Monthly Magazine*

feet wide, was arched with brick but on the morning of 13 April 1812 some of the brick-work 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 Croad of the National Monuments Record for this reference (from H P Clunn'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 that of 1823 at Reigate (through sand) still has a



Short Sunderland Flying-boat

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 Sowan

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 used electricity for operating such a telpher line and in 1883 an experimental line 700 ft long was built near Baldock, 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 gault 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'