

AIA's 1000th

In *AIA Bulletin 11/2* we mentioned that Dr A Freedman of Church Minshull, near Nantwich, Cheshire had been enrolled as the 1000th member of the AIA and it was hoped to make a suitable presentation to him at the Annual Affiliated Society's Conference at Ironbridge in March. John Powell's picture, reproduced below shows that this was done, and on Saturday afternoon March 23rd Dr Freedman received a complete set of *The Industrial Archaeology Review* magazines from AIA President, Bill Thompson. Dr Freedman is on the left.

Six separate docks and a conglomerate of buildings now make up **Portsmouth Naval Base** and travelling between one part and another, constantly crossing land and water, was always difficult from the start in the 17th century. Fortunately Sir Samuel Bentham, who co-ordinated much of the construction in the late 18th and early 19th centuries had the ingenious idea of providing caisson gates at the seaward ends of each basin (except number 5 . . . which confusingly was one of the first to be built) which enabled people to pass over the dock entrances, rather than to have

to go round the perimeter. These 'gates' were tanks or pontoons which were able to be tightly secured against the dock walls, when in use as vehicle or walking ways, and were floated away from the entrance to enable the dock to revert to its main function. Originally of wood, which not surprisingly rotted, they were eventually replaced by wrought-iron structures.

One of these has recently been excavated and surveyed after being hidden for a hundred years and the following report and picture (taken in January 1984) comes from Dr Ray Riley of the Portsmouth Royal Dockyard Historical Society.

In the 1840s the Steam Basin was under construction and such was its size (7 acres) that a wrought iron caisson was incorporated to provide a circumferential standard gauge rail track, operating through turntables at each end of the caisson. The basin was opened by Queen Victoria in June 1848. However, the rapid increase in the size of vessels caused other entrances quickly to be cut, first in 1861 through the combined Nos 7 and 10 docks and then in 1876 when a larger caisson entrance was built in the north-east wall of the basin. Eventually the old caisson was boxed in with granite walling and the space filled with sand and shingle; she was preserved *in situ*.

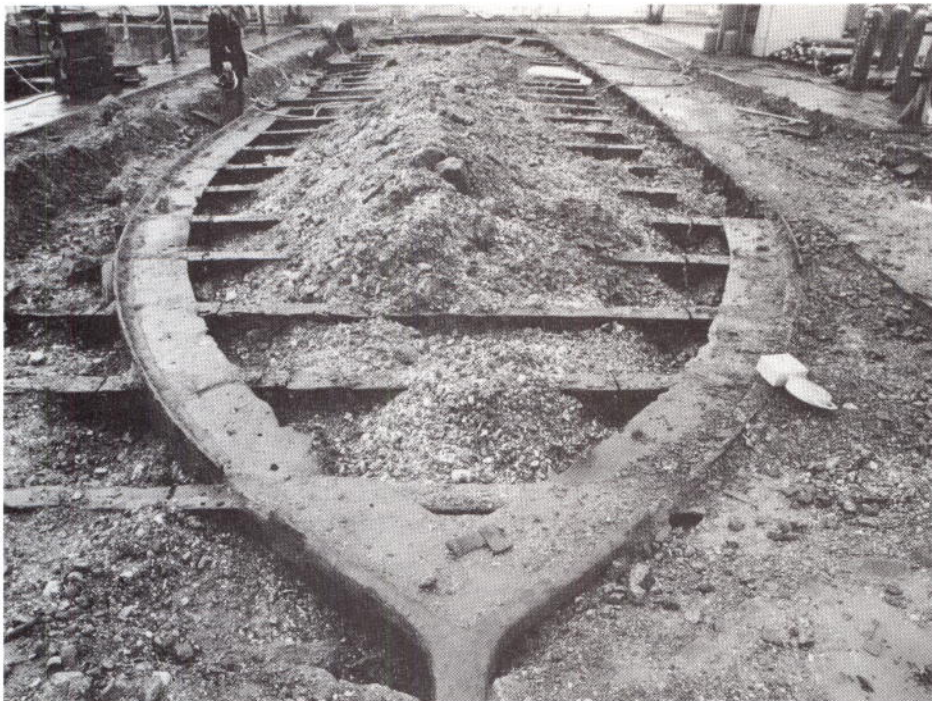
Road repairs undertaken in January 1984 revealed the existence of the old caisson. Contractors found it necessary to excavate a shallow

trench to remove the upper sections of the caisson and this in turn allowed a couple of days for a survey to be prosecuted. Since caissons were required to float through the expulsion of water contained in interior tanks when access to the basin was necessary, they were built with distinct similarities to ships, possessing a keel which was carried upward fore and aft and which was used as a means of positioning the caisson into sill recesses in the entrance, a curved 'bow' and 'stern' and a longitudinal camber. Certainly the first two of these characteristics were plain to see, since the decking which cantilevered out at each end over the 'bows' to provide a rectangular surface to the caisson had been removed at an earlier stage. Equally it became apparent that the techniques employed were those of the early metal shipbuilding era, which owed much to experience gained in wooden ship construction — indeed the foundation stone of the basin was laid in January 1845 only shortly after the launching of Brunel's seminal wrought iron *Great Britain* in 1843.

The caisson is 81 ft long and 16 ft 2 in wide. There are 31 T-sectioned deck beams riveted to the underside of the stringer plate, itself secured in the shell of the hull. To achieve additional rigidity these beams are braced. The decking was of wood and many of the securing bolts remain; they are either square headed or irregularly octagonal and are of two lengths: 5" and 9". In the absence of the decking it is not clear how the rails were pinned, but since the decking was the same height as the adjacent quay surface, it is most likely that the rails would have been mounted on the deck beams. The deck has a slight transverse camber of 2 1/8". An analysis of rivet holes in the deck beams has revealed that the alignment of fibres at the edge of the hole is consistent with punching rather than drilling, indicative of the somewhat imprecise production methods of the day.

In keeping with shipbuilding practice the caisson was constructed with a slight longitudinal camber of 6". The shell plates overlap on their longer, horizontal edges, the union being effected by single riveting at 3" intervals. The shorter, vertical edges of the plates are not overlapped and butt against each other; they are linked by means of a 4 1/2" wide buttstrap through which rivets are driven into the plates, again at 3" intervals. The shell is further stiffened by vertical ribs riveted in position at intervals twice as frequent as the deck beams. The shell plates taper predictably from stern to stern, but somewhat surprisingly the plates are of a variety of lengths, varying from between 4 ft 6" to 9 ft 6", although most are in





Boat shaped caisson, patented by Samuel Bentham in March 1812 (Number 3544)

the region of 6 ft. The justification for this may have been to ensure that the junctions (butts) of the plates did not always fall above and below each other. However, the system employed has resulted in a less than efficient spacing and in one case the butting of the plates in the sheer strake (upper line of plates) and the strake below comes perilously close to making a vertical line of weakness. On each side of the hull 12 apertures 1 ft in diameter have been cut in the sheer strake to provide illumination, but this would have been insufficient for those working at the pumps below where a lantern would have been required. All the plates were found to have been coated with pitch and caulked at their edges. Some indication of the labour intensity involved in the fabrication of the caisson may be derived from the calculation that something of the order of 442 plates must have been used for this relatively small vessel. At the same time there can be no denying its strength or the quality of the wrought iron which has ensured its survival in excellent condition despite immersion in a damp environment for a century or more.

'To promote the study of Industrial Archaeology'. This phrase, taken from the Constitution of the AIA and appearing in documents relating to virtually every IA society throughout the country, is so obvious in intent to warrant any further comment, yet how do we do it at what is popularly known as the grass-roots-level?

By organising courses, conferences and seminars (of course) by publication of the results of research (naturally) by encouraging improved standards of recording etc etc (it goes without saying) but all of these things tend to 'preach to the converted', to cater for the increasing number of people who have found in IA an outlet for their interest in the history of everyday life. Equally important, however, is the backup requirement of providing a directory, gazetteer, guide, call it what you will, to the industrial archaeology of any particular area, so that people relaxing in front of the television and watching such programmes as *All Our Working Lives* can identify what they are seeing with what remains on the ground in their own district.

Of course there have been many well researched efficiently organised printed books on regional aspects of industrial archaeology but these have become more expensive over the years with fewer publishers willing to take the commercial risk of supporting a book which may not be viable and pushing these above the price bracket of the casual buyer, who merely has an ephemeral interest which could become a permanent study.

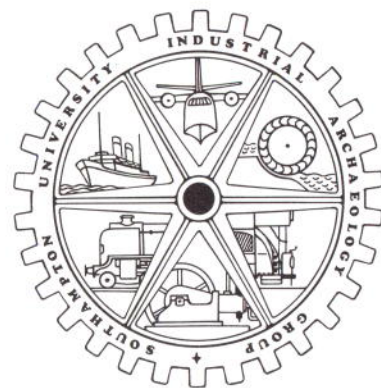
This is where local publications come into their own. Produced by enthusiasts, with the vitality of people doing for pleasure, what they get pleasure from doing, the local society 'Guide to the IA of . . .' is usually of inestimable worth both in content and value for money.

Few districts are without some kind of local guide and a couple of new enthusiast researched publications have recently appeared and are worth considering.

The first is the third edition of *Industrial Archaeology in Gloucestershire*, published by the GSIA and available, price £1.50 from N Hodgkinson of Whithorn, Greenway Lane, Charlton Kings, Cheltenham, Gloucestershire.

It is a 36 page (plus covers) booklet of 9 1/2" x 7" and lists 144 sites. Three maps are included, and sites are numbered, and can easily be located from the National Grid Reference, given in every case. The Gazetteer is divided into some twenty five sections such as 'Waterways', 'Iron Smelting' and 'Stone Mining' to give three examples, plus separate pages dealing with the City of Gloucester and the towns of Cheltenham and Tewkesbury. There are twenty three illustrations, plus the maps and the whole has been edited by the GSIA's president, the Rev W Awdry from information supplied by a couple of dozen contributors. The first edition was produced in 1973, the second a couple of years later and this latest in December 1983. In the boundary reorganisation of 1974 Gloucestershire got smaller (although the GSIA guide is actually larger) but basically the new book is a revision of the earlier ones. The Society have 2,000; they are sure they will sell them, and for anyone holidaying in Gloucestershire, or passing through on the way to the south-west it is a good buy which can also be obtained from booksellers.

A Guide to the Industrial Archaeology of Hampshire and the Isle of Wight



Edited By Pamela Moore

The second book *'A Guide to the Industrial Archaeology of Hampshire and the Isle of Wight'* is published by the Southampton University Industrial Archaeology Group and can be obtained (price £2.75 plus 50p p and p) from Mrs Pam Moore, c/o the Department of Adult Education, the University, Southampton, Hampshire SO9 5NH.

It has 84 pages (plus cover) is A4 (297mm x 210mm) and contains 573 site references, which vary from a dozen words (milestone description) to two and a half pages (and some twenty separate entries) for HM Naval Base at Portsmouth which is almost a town in itself.

The Southampton University IA Group published a Hampshire IA Guide in 1975 (52 pages and 305 entries) and this, edited by Monica Ellis, was fairly quickly sold out. The first one is similar in style to the GSIA publication and I suppose it could be described as a 1970 type IA Gazetteer or even the industrial archaeology of the Hampshire industrial archaeology guide. When it was decided, in the autumn of 1982, to produce a new gazetteer, the people involved, headed by their new Editor, Pamela Moore, decided to bear the old guide in mind but to begin again with open minds. The field work was carried out during 1982 and 83 by thirty two individuals, very many of the sites recorded being visited by more than one person. A uniform approach to the multitudinous subjects was provided by Pam who wrote all the introductions and on receiving site reports from other surveyors, edited or occasionally reworded, as she felt necessary to maintain a corporate identity. Pam selected the sites to be included, with a good cross section, both geographically and thematically, uppermost in her mind, feeling it was very important to have examples of each industry from different parts of the country, to avoid the 'interested observer' having to travel too far.

Pictures, mainly photographs but some old postcards, maps and some excellent line drawings by John Reynolds of the County Architects' Department, are used in profusion and there are actually 98 half-tones, 64 of which are made from photographs taken by Pam Moore. This fact must be of considerable relevance for al-

though Edwin Course, Ray Riley, John Silman and many others have contributed invaluable parts to the whole, Pam Moore's enthusiasm permeates the entire publications. Her introductory sections are brief and contain suggestions for further reading and the book ends with a list of useful addresses, including the AIA, which will point the new recruit to IA, in the right direction.

Pam says she saw the project as principally introducing new people to IA, although she hoped that it would prove to be of interest to those already 'converted'.

An objective review of *A Guide to the Industrial Archaeology of Hampshire and the Isle of Wight* will appear in the first issue of new *Industrial Archaeology Review* but first impressions are that it goes a long way to help 'To promote the study of Industrial Archaeology'.

The 1984 AIA Conference, as most people know, will be organised by Douglas Hague. As an aperitif to this feast of Welsh culture, we offer a short piece on the Pontarfynach, a bridge archaeologist's dream near Aberystwyth, and a feature of the local scenery.

Devil's Bridge Dyfed. For at least two hundred years the name Devil's Bridge has been applied to Pontarfynach, a small masonry bridge spanning a spectacular gorge through which the river Mynach flows to fall by way of the Mynach Falls to its confluence with the river Rheidol. Wordsworth's sonnet, 'To the Torrent at Devil's Bridge' captures perfectly the scene in 1824, and it will be seen in much the same light by any romantic viewer today, unless his visit coincides with August Bank Holiday. Wordsworth's query . . . 'Can such force of waters issue from a British source, or hath not Pindus fed thee! . . . produces a similar incredulity when one reads the following facts given by

the present River Authority. *At a recording weir a little below the falls the volume of water in cubic feet per second is stated to be as follows: average summer 10, average winter 75, August 1976 1, and incredibly, August 1973 6750!* As Wordsworth was in Llangollen in September perhaps we have here evidence of the Welsh late summer monsoon of 1824.

Having been a famous beauty spot, much frequented by tourists since the late 18th century, it has gradually acquired traditions and history which should be viewed with some circumspection. Any remote and humble medieval structure in Wales, where public and private records are meagre is unlikely to have any supporting documentary backing, and the statement on a painted board that the bridge was built in 1087 should not be taken seriously, we are indeed lucky to have a few mentions in the Quarter Session Accounts.

However, a recent examination and survey of the bridge has revealed that it is not only an interesting and ancient one, but one well worthy of preservation. It has no ancient recorded history, but the traditional association with the Cistercian Monastery of Strata Florida is by no means improbable. The bridge is 7 miles north of the Abbey, 3½ miles north of the Yspytty Ystwyth and 1½ south of the other hospice of Yspytty Cyfnyn. All these were clearly on the upland 'pilgrim' route which presumably continued to Ponterwyd and then north to the hospice at Gwanas and Cymmer Abbey.

Strata Florida was commenced ca 1184, although an earlier site did exist. However the provision of a bridge over the Mynach is most unlikely to have exercised the monks until long after they had completed their own immediate building programme. Any very early bridge would almost certainly have been a primitive wooden construction, there being plenty of timber around and the actual span of little more

than 14 feet would present few problems.

Devil's Bridge consists of three superimposed bridges, although the building periods exceed this number. Not unnaturally the earliest is the lowest, and this is in the form of a single roughly pointed rubble build arch about 16 ft 6 ins in span. The height of the parapet is about 17 ft above the base rock foundation of the NW side which is lower than the opposite bank. The arch is formed of thin slab voussoirs which on the up-stream side has been rebuilt. This is the side visible to the many thousands of tourists who pass through the turnstiles and descend the tortuous steps to the abysmal depths of chasm. Whilst in this advantageous position and before climbing up to road level the visitor will notice that the under-side of the arch is of original masonry, as indeed is the downstream arch face.

No prudent architectural historian would be prepared to date this arch either by its form or construction: such an arch could be placed as late as the 17th century. However a convincing medieval parallel can be found within ten miles at Llanddewi Brefi. Here the parish church, when built in the 13th century was an ambitious building for Cardiganshire. Originally with transepts, all that now survives of the ancient fabric is the central crossing tower. On its north and south sides the lofty blocked pointed arches can be seen, internally the west and the east arches which form the church entrance are both still exposed. Both are of 13 ft 10 ins span, are pointed, and considered with the church plan are undoubtedly of the early 13th century. The simple vault under the tower is 16 ft 5 ins wide and is of the same profile, quality, character and span as Devil's Bridge. As it is an integral part of the 13th-century church, a date as early as this can well be ascribed to the bridge. The tradition that it was this bridge that Giraldus Cambrensis crossed in his itinerary of 1188 should not be dismissed out of hand although it is an unlikely

