



Windmill once used for pumping brine to the top of a tower
Photo: M. Palmer



Concentrated brine from the gradation towers is held in wooden holding tanks before passing to the saltworks
Photo: P. Graham

extended to the works. The connection to the works is now disused and coal is brought in by road.

Drained salt is loaded, by hand, into a skip suspended from a monorail which incorporates a weighing station. The salt is moved to an adjacent building and fed to a rotary tubular dryer in the basement. The means of heating the dryer was not ascertained. Dry salt is raised by a small bucket elevator to an oscillating screen where lumps are removed. The screened salt is then packed into 1 kg plastic bags and heat sealed. The spent liquor from the pans (lye) is placed in plastic bottles and larger containers. Workers were seen packing cardboard boxes with a bag of salt and a bottle of lye ready for sale.

The Manager of the works provided analyses of salt and lye which were carried out by the Balneoclimatic Institute, Poznan. These analyses are given in Table 2.

Regarding claimed therapeutic properties, a document² states that the iodine content of the salt is high enough for no further addition to be required for the prevention of thyroid problems. The presence of calcium and magnesium is claimed to be a useful supplement for people living in districts with soft water.

Table 2

Analyses of Salt and Lye produced at Ciechocinek

Ion	Units	Salt	Lye
Na ⁺	g/kg	371.93	48.379
K ⁺	g/kg	-	4.43
Ca ⁺⁺	g/kg	0.561	22.059
Mg ⁺⁺	g/kg	0.213	16.915
Cl ⁻	g/kg	591.11	166.710
Br ⁻	mg/kg	249.87	230
I ⁻	mg/kg	5.24	36
SO ₄ ⁻⁻	mg/kg	-	642

A second document³ lists a number of applications for the material. The principal ones are:

1. Undiluted lye can be used for certain cases of diseases of the limbs.
2. Diluted lye with a concentration of 1.5-3% can be used as a mineral bath.

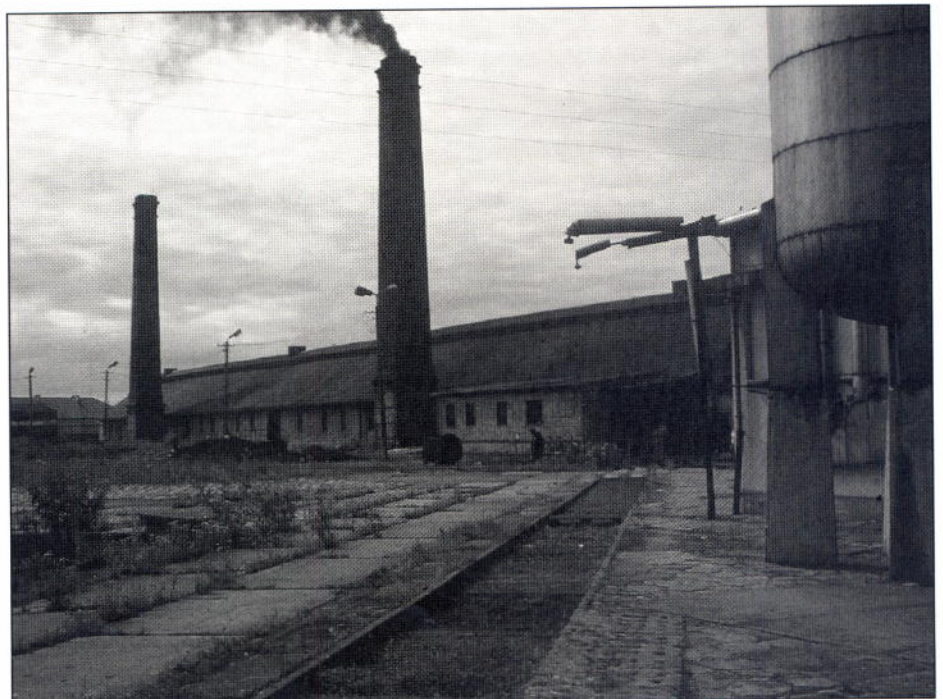
Other uses of the diluted lye include the treatment of: orthopaedic trauma, diseases of the nervous system, rheumatic diseases, hypertension and skin allergies. Inhalation from a 1.5-2% concentration solution is recommended for catarrh of the respiratory system, bronchitis, emphysema and bronchial asthma.

The author treats these claims with a large pinch of – salt!

The author wishes to acknowledge the help of Prof Ray Riley and Dr Anna Niznik for arranging the visit and acting as interpreter, and the management and staff of the works for their time and assistance.

REFERENCES

1. Rogers, B. 'Innovations in the Manufacture of Salt in Eastern Australia', *Australian Journal of Historical Archaeology*, vol 2, Oct 1984
2. *The results of the chemical investigation of the evaporated salt from Ciechocinek*, by Dr Alfred Gornick, Balneoclimatic Institute in Poznan, undated
3. *'Usability assessment of the lye from Ciechocinek for healing aims'* Balneoclimatic Institute, undated



Coal smoke at the Ciechocinek saltworks

Photo: M. Palmer

Culford's 'Lost' Bridge

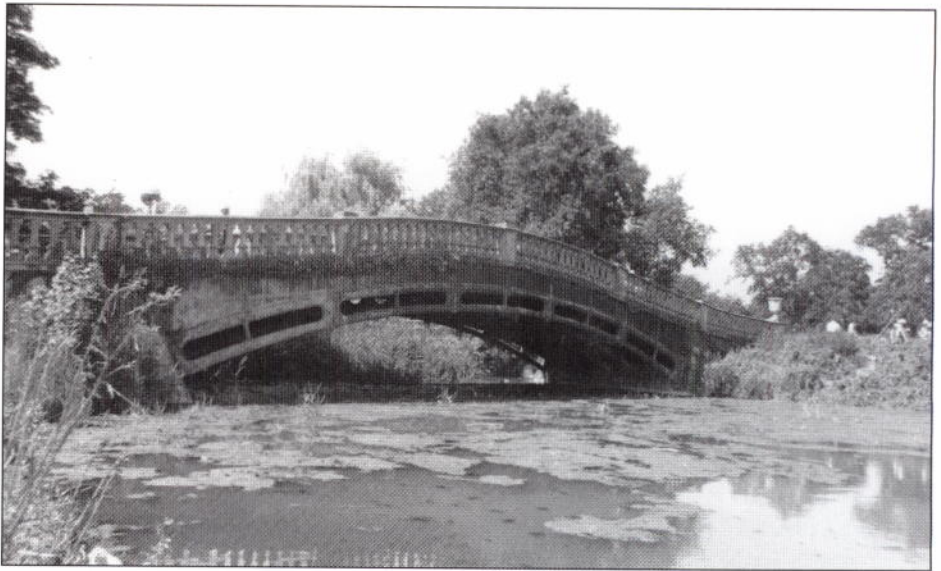
David Perrett

Following an IA society field visit, the significance of a recently 'discovered' iron bridge in a rural setting in Suffolk, just north of Bury St Edmunds, and its connection with the inventive Wyatt family are discussed.

It is not usual that the sites on Greater London IA Society's summer outings are found in the newspapers, but having decided to visit the North Suffolk/Norfolk area, David Alderton suggested that a very interesting visit would be to Home Farm at Culford. Shortly afterwards *The Times* (18 May 1996) reported that a 'forgotten' cast-iron bridge had been found in the grounds of Culford Hall. A phone call to Home Farm revealed that it was the same Culford and the bridge had not been lost since it was over the farm's mill pond and permission to see it could be obtained from the Bursar at Culford School (the Hall was now an independent boarding school). So in July the GLIAS coach party pulled into the extensive grounds.

Culford Hall, an eighteenth-century mansion, was extended in the 1790s by the eminent architect James Wyatt (1746-1813) and the grounds re-modelled by Humphrey Repton. The grounds include a lake formed by taking a leat from the River Lark. The lake was not only ornamental but also a mill pond for Home Farm. At the point (TL 827704) where the leat widens out into the lake a bridge was constructed which seems only to lead to fields across the river from the house. Following the sale of Lord Cornwallis's estate in 1935, the school has occupied the Hall and over the years the lake silted up and the constructional nature of the bridge was obscured by high waterweeds. Since the parapets are made of stone it would have seemed to be a typical stone bridge.

Last year saw the cleaning of the lake and details of the bridge were revealed. The bridge is 28 m in



Culford Bridge was revealed by pond clearance

Photo: D. Perrett

span and about 6 m wide. It consists of six arches springing from stone abutments with each arch being formed from five hollow tubular cast-iron voussoirs. The main members of each are of oval cross section. Each of these substantial castings are apparently held in place without fixings in the manner of a stone arch.

Clive Paine, the local archivist, linked the bridge to Samuel Wyatt (1737-1807), brother of James. The Wyatts were a large family of architects, inventors and engineers. They were friends of Boulton and Watt, Matthew Boulton having sponsored Samuel to build both Watt's and his own homes and later around 1800 possibly new buildings at the Soho Manufactory. Having moved to London, Samuel practised as an architectural carpenter, then an architect on various government contracts including a flour mill for the Navy at Weevil near Gosport. With this experience, in 1783, he formed a company to build the notorious Albion Mill at Blackfriars, London. This, the first steam-powered mill, he designed himself and employed Boulton & Watt rotative engines to drive the millstones. The mill, the greatest industrial venture of its day, started in 1786 but was burnt down in 1791.

In 1797, Wyatt was involved along with others, in proposals for new Thames crossings being considered by the Bridge House Estates and in 1800 proposed an iron bridge over the Thames. This combined with his necessary interest to fire-proof construction led on 10 June 1800 to the publication of patent No 2419 for 'making and constructing bridges, warehouses and other buildings without the use of wood' and includes elements of prefabrication in the design. The patent includes a bridge of the exact same design as that surviving at Culford. His method of fire-proof construction, using curved iron plates instead of the brick arches used in Belper Mill, though, was not employed in an abortive design to re-build Albion Mill.

The source of the ironwork used in the bridge is unknown. Local rumour suggests that the members of the bridge were cast from cannon captured in battle by Lord Cornwallis. However, the size of the units is substantial and probably exceeds the capabilities of a local foundry at that period. It is possible that they are from Boulton and Watt, who had just completed the structure as well as the machinery for Salford Mill, Manchester.

Culford Bridge is unique in other ways. Firstly, it survives in its original form – something that would not have occurred had it been on a public road. Equally it does not seem to have ever carried heavy loads. It was overlooked in architectural surveys of the Hall by heritage bodies: English Heritage have now listed it Grade 1. One wonders if similar gems lie undiscovered on other estates not open to the public. The bridges at Shugborough Hall (1811), Bragyns Park, Marple (1813), Walton Hall, Wakefield, and Syon Park, West London, are better known.

And what of Home Farm, Culford – a superb model farm of c.1870 complete with waterwheel, workshop, hydraulic ram, cast-iron stalls and piggery all connected by a narrow gauge tramway system and still very much a working farm. Two good reasons to visit Culford.

GLIAS thanks Lt Col Peter Godwin, Bursar of Culford School, and Mr Keith Flack of Home Farm for gratefully allowing us to visit their respective properties.



Detail of iron arch, showing the stone balustrade above

Photo: D. Perrett

Current Research and Thinking

Marilyn Palmer and Peter Neaverson

The third of our pre-conference seminars, held in Bangor on Friday 6 September 1996, proved a stimulating introduction to the main conference. Representatives from the heritage bodies, including for the first time Northern Ireland, were invited to contribute papers on specific projects rather than give more limited reports to the main conference as they had done previously. All the papers offered something of interest to a varied audience.

Our first speaker, Ray Riley of the University of Łódź, achieved the 20-minute target with his illustrated paper on the textile mills of the 'Polish Manchester'. The development of the textile industry in Łódź was stimulated by the Russians, under whose jurisdiction Łódź came until 1919. Four hundred mills had been constructed by 1912, most of the large mills being financed by Prussian capital. Professor Riley examined upwards of 50 mills in an attempt to determine whether their distinctive characteristics were the result of cultural differences or functional imperatives. His analysis prompted the delegates to make useful comparisons with British and European practice.

Miles Oglethorpe described RCAHM Scotland's survey of Nobel Explosives' Ardeer Factory in Ayrshire. Like many others since the end of the Cold War, this factory has been run down and the process of decommissioning and destructive decontamination is now accelerating. The survey of the 5.5 square mile coastal site was to ensure that a record survives the factory's inevitable closure and disappearance. Miles drew attention to the problems of recording large industrial sites, particularly those of a toxic nature and under strict security restrictions. He emphasised the intimidating technical complexities, and the difficulties of dealing with a disillusioned workforce under threat of redundancy. Conserving the existing archive was an important part of recording.

Andrew Davidson (Gwynedd Archaeological Trust), moved the scene to some very different coastal sites, the scanty remains of a group of tide mills near Holyhead on Anglesey. He ably demonstrated the importance to IA of the relationship between documentary and field evidence. Most of the mills were shown on individual estate maps, but the field study revealed their spatial relationship. The remains consisted largely of dams and foundations, but the documentary evidence indicated that they were Vitruvian mills with lantern gearing.

Henry Gunston continued the theme of water power in his discussion of the Institute of Hydrology's project on Historical Hydrology, designed to investigate historical records to supplement the measured records of the last 25 years or so. This information is being incorporated in the National River Flow Archive, which is used in hydrological analysis for planning and management of water resources. Elsewhere in this newsletter, he makes an appeal for information on river flooding etc which readers might encounter in their research.

Andy Josephs of Wardell Armstrong returned to North Wales with a little known mining complex on

the Llyn Peninsula, which employed up to 200 men and produced 90% of Britain's output of manganese at the turn of the century. His survey of Benallt and Rhiw Iron and Manganese Mine for Gwynedd County Council was designed to assess its archaeological content and significance, and (in conjunction with other disciplines) to advise on potential reclamation strategies. Surface features revealed structures, inclines, winding equipment and a boiler which reflected three primary phases of mining ending in 1945. As with most mining sites, the options ranged from simple fencing to elaborate shaft capping etc which would destroy the archaeology.

Joan Unwin of the University of Sheffield moved the theme from sites to artefacts with her consideration of the use of Sheffield Cutlers' marks as an aid to dating. This work will be described in a future issue of *IA News*.

Oliver Pearcey brought delegates up to date with a consideration of English Heritage's work in IA a year on from the Policy Statement. Monuments Protection Programmes had been decided on for 51 industries, of which 20 were under way and those for lead and coal had resulted in an increase in scheduled sites. Although grants of £1m had been made to industrial structures, this was less than the previous year, reflecting the 40% cut in EH grant aid. Lottery funding is increasingly important for industrial preservation and museums. Thematic listing was continuing, but the new policy on consultation is taking a considerable time. He reiterated English Heritage's commitment to IA: the advisory panel would focus on a survey of the financial needs and sustainability of industrial monuments over the next five years.

David Percival of RCAHM Wales discussed problems and opportunities in the compilation of Industrial Landscape Databases, taking the Dowlais section of the Heads of the Valleys area as an example. Whereas databases normally record individual sites, this landscape included superimposed linear features, resulting from the exploitation of iron, coal and limestone and the associated transport systems. Aerial surveys had been analysed to provide a sequence of overlays which could be used to establish relative chronology.

RCHM England recently established its headquarters in the former GWR workshops in

Swindon, which has prompted Keith Falconer to study Historic Railway Engineering Works. This interest is generated from the perspective of emergency recording - railway workshops were being demolished all around the country with very little consideration of their merits, and little recording. A novel range of buildings was developed by railway and private companies in the second half of the nineteenth century, for the construction, servicing and repair of locomotives and rolling stock. Specific surveys have been made of Swindon and Derby works.

Michael Coulter looked at the IA work of the Environment and Heritage Service of Northern Ireland. He considered the differences in the province, which lacks a Royal Commission, SMRs, county conservation officers and, largely, voluntary groups, and has separate legislation from mainland Britain. An attempt has been made to improve knowledge of what exists by bringing the environment and heritage together in the new Agency, set up in April 1996. He referred to the pioneering work of W. A. McCutcheon in recording sites in the province, now amplified by an Industrial Heritage Record based on 6-inch county maps. Recent political developments in Northern Ireland, resulting in pressure for redevelopment, have highlighted the urgent need for a comprehensive record.

On behalf of AIA, the seminar organisers thank all the contributors who made the journey to North Wales. The vast majority were professionally engaged in archaeology and now include industrial sites as part of their remit. As seen at the Ironbridge Weekends, the rapid decline of heavy industry and the pressures for reclamation and decontamination of sites present both an opportunity and a challenge to the archaeologist. The papers presented at Bangor indicate in particular how the statutory bodies have risen to the occasion and are making a very positive contribution to the subject.

A further seminar will be held before the AIA Newcastle Conference in 1997, taking as one of its themes the problems of urban IA. Potential contributors should contact the *Review* Editors, who would also be pleased to receive offers of other papers including those on the methodology of the subject.

AIA

ASSOCIATION FOR INDUSTRIAL ARCHAEOLOGY ANNOUNCING THE THREE FIELDWORK AND RECORDING AWARDS FOR 1997

The AIA Fieldwork Award scheme exists to encourage recording of the physical remains of the industrial period to high archaeological standards. The awards are open to both amateur and professional field workers, and have been operating successfully for almost a decade.

Work submitted may already have been published or if not, may be encouraged to publish.

As well as the main award there is also the Initiative Awards for innovative projects eg those from local societies and to encourage the future industrial archaeologists, a Student Category.

THE CLOSING DATE FOR ENTRIES IS 1ST MAY 1997

Successful Entries will be notified in August

The successful authors will be invited to attend the AIA annual conference in Newcastle to collect their awards in September 1997

Entries should be sent to:

Victoria Beauchamp, c/o The Division of Adult Continuing Education
University of Sheffield, 196-198 West Street, Sheffield S1 4ET

FURTHER DETAILS WILL ALSO BE AVAILABLE FROM THE ABOVE ADDRESS