



NUMBER 79

1st quarter, 2018

CONTENTS

REPORT

- Ethical Conservation, *G J O Wallis*

WORLDWIDE

- Henry Ford's 1928 IA Holiday, Part 2, *David Perrett*
- Iron Heritage Meets Iron Art, *Zachary Liollo*
- The Iron Process, *Bengt Norling*
- Industrial Heritage Re-Valorization, *Volodymyr Kazakov and Viktoriia Patsiuk*
- The Lachine Canal: a Heritage Challenge, *Alain Gelly*
- Tafi Viejo Railway Workshops, *Monica Ferrari*

WORLD HERITAGE EXPERIENCES

- Blaenavon Industrial Landscape, *Peter Wakelin*

MODERN INDUSTRIAL MUSEUMS

- Foundation for the Protection of Silesian Industrial Heritage, *Piotr Gerber*

EDUCATION & TRAINING

- Sustainable Development and Industrial Heritage, *Jana Horrocks*
- Tourism, Technology and Heritage, *Stefan Poser*

TICCIH CONGRESS SANTIAGO DE CHILE, 2018

- Valparaíso Lifts and Funiculars, *Jaime Migone*

TICCIH CONFERENCES

- 6th International Congress of Railways, History and Heritage, *Gràcia Dorel*
- TICCIH Thematic Conference on the Water Heritage

CONFERENCE REPORTS

- Industrial Heritage in India, workshop at the ICOMOS 2017 General Assembly, *Miles Ogglethorpe*

EVENTS CALENDAR



Industrial tourism in Ukraine includes 'dark' tourism sites such as the Chernobyl nuclear power plant (see page 12). Stefan Poser presents a workshop on technology-based tourism on page 24.

OPINION

THE INDUSTRIAL HERITAGE INVENTORY OF INDIA

Moulshri Joshi

The Industrial Heritage Inventory attempts to report on what exists in India under the loosely defined term 'industrial heritage'. For several years there has been no TICCIH national report from India. This is partly due to the newness of the concept. Heritage practitioners are only beginning to take stock of our modern scientific and technological heritage. Knowledge and documentation lies distributed across many fields and many places. Disciplines and formal sources are secondary to the living memory of the industrial culture.

The inventory brings together 100 sites from across India. There are 34 sites of production and manufacturing, 37 sites of infrastructure, four marking industrial disasters and ten sites that preserve and interpret industrial history as museums or educational institutions. Some sites are recognized at local or national level but most are unacknowledged. Only 30 of the 100 remain out of use and indicate, albeit disproportionately so, the limited extent and slowness of de-industrialization in India. Here this Past has not passed on, at least not as yet. And even though former industrial megacities such

OPINION



Children of Jharia, the burning coal town. Photo: Ronny Sen.

as Bombay and Calcutta have already seen a century of steady de-industrialization, concerned disciplines have not started taking stock of its relics and legacy in a systematic manner.

Identifying Themes The inventory opens up the sheer wealth of built heritage that lies within the country presenting a deep and continuous history of technological heritage. Kallanai Dam, built over 2000 years ago across 69,000 acres of fertile delta and still in operation; the rust-free, metallurgical marvel of the Delhi Iron Pillar which weights 6000kgs and has resisted corrosion for 16 centuries; these are sites that draw our attention to a past that was inventive and advanced. Terms such as 'traditional' or 'proto-industrial' may not capture its spirit entirely.

The story of Indian struggle for independence is closely linked to the story of the struggle for its workers. The Salt fields of Dandi and Dharsana salt factory were sites of protest against sanctions imposed by the British on indigenous production of salt. Mahatma Gandhi's call for adopting indigenous lifestyle and rejecting British (machine-made) goods was a frontal attack on the imperial industrial economy but also a philosophical tenet co-opting people into a small, sustainable way of life.

Looking back, the decades belonging to the early industrial revolution in Europe coincided with the British rule in India. Vigorous trading and related expansion by the French, Danes, Portuguese and Dutch continued alongside. Some spectacular projects were envisaged and developed during this period through a partnership between the British and the people of the Indian subcontinent that was morally and practically untenable. The UNESCO World Heritage site of Victoria Terminus in Mumbai is an example of this legacy.

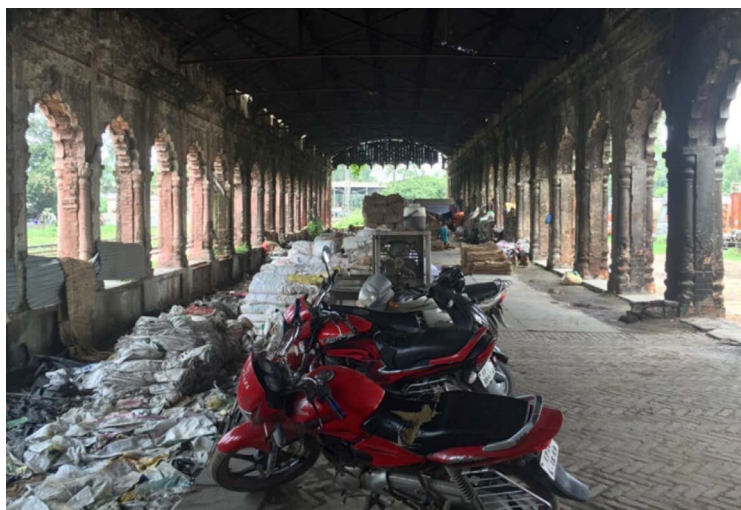
It must be said here that the magnificent industrialization of Colonial India, bringing together cultures so remarkably different, cannot be seen through the innocuous concept of 'shared heritage'. The collaboration of the colonial agency with the Indian counterparts was never a marriage of equals or a partnership of mutual benefit. The industrialization of India in all its cosmopolitanism was based on the self-serving enterprise of the British fuelled by an exploited, invisible workforce. The documentation of this history is very one-sided, sometimes constructing an almost-altruistic nature of the Raj and romanticizing a heavily unequal relationship between a white man and the brown ones. Women of both colors, remain conspicuously absent from these narratives. The mainstream discourse on 'shared heritage' is packaged in feel-good veneer, deliberately overlooking the exploitation of people, omissions of their history or turning their reality into fantastical versions.

Relics of the British Raj include the technological vestiges of the princely states of India, provinces ruled through alliance and not annexure. These autonomous, sometimes rogue, states produced sites of significant historic importance parallel to the imperial project of modernity. The Nawab Railway Station of Rampur is an example of provincial efforts at industrializing. Such examples are rich in demonstrating the cross-cultural world the royals lived in and the temperament of making things provincially, of experimentation and resource-



Play titled 'Cotton 56, Polyester 84' that tells the story of the cotton mill district of Mumbai city. Source : Critical Stages, The IATC webjournal.

OPINION



The private railway station of the Nawab or Ruler of Rampur, put to newer uses (2016)

fulness within a larger and sometimes distinct narrative of colonial history outside.

I have learnt from my experience of working at the site of the Bhopal Gas Tragedy that disasters are chronic occurrences within the industrial regime. Much like the waste produced during the production process, they may be minimized but not entirely avoided. Coalmines of Jharia, a storehouse of the country's prime coke coal that have been on fire for over a century, is a particularly dystopian example of this negative heritage. Estimates vary between 400-700,000 people who continue to live on and off these mines literally smouldering under their homes. Our inventories and lists need to find space to accommodate these dissonant sites.

Modern industry identifies itself as a bedrock of strong nations, their heritage lends itself very well to the construction of a rhetoric of nationalism. The Indian welfare state relied upon an industrial future to create the foundation of an unbounded modernity. Prime Minister Nehru in a legendary statement appointed these sites as 'temples of modern India'. All across the country, some of our biggest and finest establishments were set up in the years preceding Independence and this industrial temperament was celebrated. Some examples are Sindri Chemical Plant, Bhakhra Nangal Dam, Apsara Nuclear Reactor and gridiron townships of Jamshedpur, Rourkela and Durgapur. Today, many of these sites are on hard times due to economic liberalization.

Lying just beneath the surface of the industrial sites and monuments are intangible memories that need have been included in the inventory. Illustrations of processes in the manufacture of opium in Patna, Bihar by Company Painter Shiva Lal (c.1817-1887) are revealing of the Company culture and life of the Indian indentured workers. It is not hard to discern the brutality embedded in the genteel paintings commissioned by the Company. Shiva Lal's paintings are reminiscent of Sakubei Yamamoto's coal mining paintings from industrial Japan which are now listed in the Memory of the World Register of UNESCO.



A postage stamp commemorating Gandhi's march to Dandi saltfields where he launched Satyagraha, an act of nonviolent civil disobedience in colonial India to protest against the British salt monopoly. Photo: www.istampgallery.com

Although only few, the inventory records institutions which work in the field of documentation and preservation of this heritage. Museums such as the National Rail Museum, an immersive museum of railway heritage containing amongst other gems the world's oldest working steam locomotive in operational service, serve as educational centers.

While the scope and scalability of this project is immense, the question of limits has been a constant concern. Given that the recognition of 'industry' as 'heritage' in India, has few precedents, what will be the terms of reference for sites from this inventory? If the Asian experience is indeed different from the experience of the West, how do we organize it into a useful and robust rubric? The answers to these questions will depend on the process we take to deliberate on the concept of industrial heritage.

Contact the author

INTERNATIONAL ETHICAL CONSERVATION

G J O Wallis, *Geoff Wallis Conservation*

Why does the conservation of industrial heritage need ethics? My forty years as a contractor and consultant lead me to conclude that clear, concise statements in each field of conservation are needed:

- to encourage the proper care of historic fabric and the evidence it contains,
- to provide a rational defence against adverse influences,
- to promote order, consistency and fairness in planning and delivering care & conservation, and
- to define good practise for the benefit of owners, professionals and practitioners.

At an international level bodies such as UNESCO, ICOMOS and the Council of Europe develop or promote overall policy for the protection and care of our built heritage. Internationally agreed principles of conservation were first stated in the Athens Charter of 1932 since when a large number of charters, recommendations and resolutions have been published, initially by UNESCO, then by ICOMOS, set up in 1965 to advise UNESCO on world heritage sites, and by the Council of Europe.

For industrial, technical and engineering heritage, the Council of Europe set out guidance in 1990 in a general **Europe-wide policy**. TICCIH signed its **Dublin Principles** with ICOMOS in 2011. A useful summary and comparison between the concepts set out in the major charters is published by Historic Scotland.

Guided by international charters, the national governments of member countries enact legislation and provide the necessary administrative framework within which the conservation industry operates.

The vast number of organizations and people who actually deliver conservation need more specific guidance in their particular field of activity. But the devil is in the detail. Charters and policy statements do not generally deal in specifics, so more detailed guidance is needed if policy is to be delivered at 'grass-roots level'. Thus TICCIH's **Nizhny Tagil Charter for the Industrial Heritage** sets out policy governing treatment of specifically industrial material, referring back to the policies of the Venice Charter. Similarly the British **Society for the Protection of Ancient Buildings (SPAB)** has recently published a clear, concise statement of conservation policy for historic buildings.

More detailed guidance on specific fields of conservation are difficult to draft, potentially contentious and can be prone to internal inconsistencies. For example, the National Heritage Ironwork Group



The outdoor end of the newly restored 1795 Elsecar Beam Engine in Barnsley, UK. All the surviving paint was retained, sampled and over-coated for protection. The engine is NOT re-steamed as this would be too risky for such an early engine, and would introduce moisture to the interior. Instead a secret slow hydraulic drive was applied to demonstrate the Engine's operation. Evidence of damage during its working life, see top of photograph, was retained. Photo: Dorothea Restorations, Geoff Wallis.

(NHIG) principles governing ironwork conservation required several committee meetings, two public forums, and a rewrite over a period of two years before being published in 2015. **Conservation Principles with Illustrated Guidelines for Heritage Forged & Cast Ironwork** was published in last year in illustrated form under my editorship, having taken a further two years.

Forged wrought ironwork illustrates the difficulty in defining good practise. Deterioration can range from minor defects to structurally unsound or even fragmentary construction. Ethical practise requires as much material as possible to be retained so a value judgement has to be made. Thus one of the NHIG Guidelines exhorts conservators to 'Retain as much existing material as possible' and recommends a cautious approach to intervention thus:

- 1) Minimal intervention or alteration of existing material, form and evidence.

REPORT

- 2) Minimal disturbance, with work carried out in-situ where practical.
- 3) Stabilization (e.g. propping, improving the environment, removal of rust and similar holding operations).
- 4) Strengthening where structurally inadequate.
- 5) Restoration should only be undertaken where all other options have been discounted.

Wasted, holed and cracked components must be repaired by patching or reinforcing in preference to being renewed. Fastenings must be repaired and re-used where possible.

Non-reversible techniques may be used only where this is unavoidable, to allow retention of a component or assembly which is of greater significance.

Guidance on the care of working machinery is yet more complicated as it must not only cover care and maintenance but often operation and safety too. Comprehensive guidance on the care and operation of heritage machinery in museums is set out in the London Science Museum's 1994 Standards in the Museum Care of Larger and Working Objects. For owners and operators of historic machinery generally the Collections Trust developed a more practical form of guidance in 2009 in Larger & Working Objects: a guide to standards in their preservation and care.

Currently the Association of British Engineering and Transport Museums (ABTEM) is drafting guidance on the conservation of larger and working objects including 'stationary engines, industrial machinery, road vehicles, aircraft, railway vehicles, ships, boats and other working items'. It is currently out to consultation and due to be launched early next month.

Guidance on the conservation of specific types of machinery is particularly useful as it shares good practices and warns against bad. Thus the SPAB Wind and Watermills Section has published **detailed guidance** on a particularly challenging specialism, the care of traditional mills.

Ships offer arguably the most difficult long-term conservation challenges. Beautifully-produced, clear, comprehensive guidance has been prepared by **National Historic Ships** based in Greenwich, London. This well-illustrated book leads the reader through the processes of assessing significance, deciding on static or operational conservation, assessment of risk to significant fabric, and the different processes of conservation, preservation, reconstruction, restoration and adaptation, finally stressing the need for ongoing care.

The organizations that prepare conservation policy and guidance do so from the highest of motives and their work is vital. However, the need for such guidance often comes as a reaction against poor practice, neglect or worse. The universal challenge is to ensure policy and guidance is applied at every level; governments, statutory bodies, regulators, local authorities, owners, guardians, contractors, individual crafts-people and volunteers. This requires an understanding of conservation principles and a DETERMINATION to apply them in the face of the many pressures and constraints within which we have to work.

Opinions expressed in the Bulletin are the authors', and do not necessarily reflect those of TICCIIH. Photographs are the authors' unless stated otherwise.

TICCIIH

President: Professor Patrick Martin, Professor of Archaeology
Michigan Technological University, Houghton, MI 49931, USA
e: pemartin@mtu.edu, t: +1 906-487-2070

Secretary: Stephen Hughes
e: secretary@ticiih.org, t: +44 1970 621215

Editor: Articles and news of recent and future events should be sent to the Editor, James Douet, C. Bruc, 176, 2. 4., Barcelona 08037, Spain, e: editor@ticiih.org

Bulletin layout: Daniel Schneider, e: ticiih@mtu.edu
TICCIIH Membership: Daniel Schneider, e: ticiih@mtu.edu
TICCIIH Website: Daniel Schneider, e: ticiih@mtu.edu

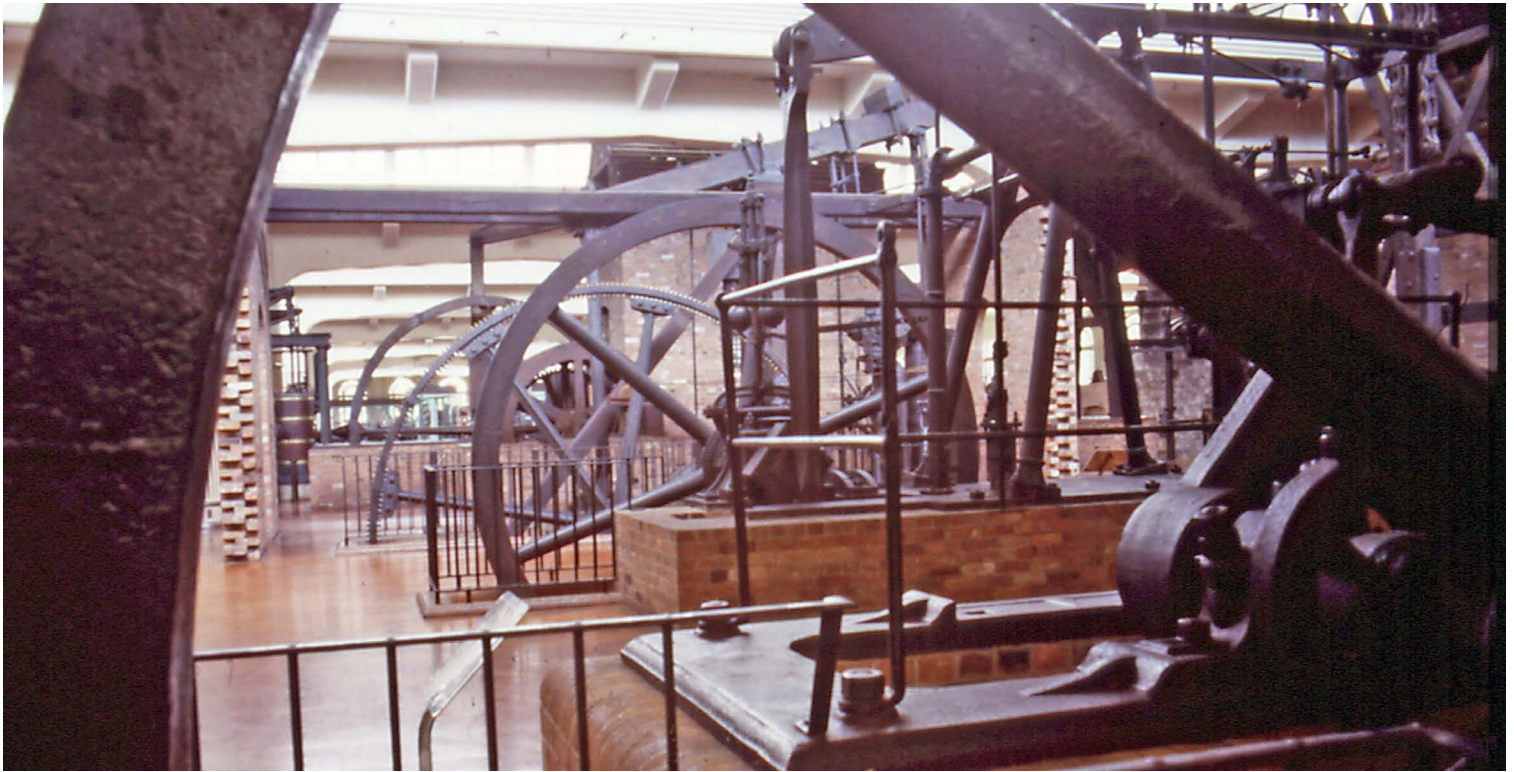
TICCIIH is the world organization for industrial archaeology promoting conservation, research, recording and education in all aspects of industrial heritage. It holds a triennial conference and organises interim conferences on particular themes. Individual membership is \$30 (USD), corporate membership \$65, and student membership. \$15

There is an online membership form on www.ticiih.org

The **TICCIIH Bulletin** welcomes news, comment and (shortish) articles from anyone who has something they want to say related to our field. The Bulletin is the only international newsletter dedicated to industrial archaeology and the conservation of the heritage of industrialisation. The TICCIIH Bulletin is published online to members four times a year.

Back issues can be downloaded as a pdf file from the TICCIIH web site, www.ticiih.org.

ISSN: 1605-6647



Rotative engines remounted in the Henry Ford Museum.

UK & USA

HENRY FORD'S IA HOLIDAY, PART 2

In the second half of the story of Henry Ford's extraordinary 1928 collecting trip, he and his agent sweep up historic engines from all over England and carry them off to Dearborn.

Professor David Perrett

After their month's stay in Britain, Henry and Clara Ford sailed back to New York. Herbert Morton was left with the task of acquiring the engines and buildings Ford had visited, dismantling them, shipping them to Dearborn for re-assembling there. This, in itself, was a major task but Ford's wish list for his museum extended to many more engine types than seen on his UK holiday, and Morton was charged with finding and obtain the desired examples.

So, he started working full time on the direct instructions of Henry, communicated via Ford's private secretary Frank Campsall from Dearborn. Telegrams with short messages such as 'buy Warwick Fire Engine' survive in Chetham's Library, Manchester. It was not only steam engines that Ford wanted. He was also after a Welsh woollen mill, a Cotswold cottage and a village smithy. Morton had to arrange for not just the construction of a replica Stephenson's Rocket but

also for Boulton & Watt Lap engine, which the Science Museum told Ford he could not buy. A request to buy Cugnot's Steam carriage exhibited at the Musée des Arts et Métiers in Paris was also rapidly turned down. There were trips to Germany in search of early diesel engines. The Fords also wanted large numbers of antiques to be sourced, brought, carefully packed and shipped to the USA.

The task of identifying the true owners of engines such as Fairbottom Bobs was a challenge in itself. Eventually it was gifted by the Earl of Stamford's Trustees in return for re-building a bridge over the nearby river that had been washed away. For others, the cost was the purchase of new electric motors to replace the steam engines, as in the case of a beam engine acquired from Coalbrookdale.

At Fairbottom, Morton and a small team of workers crudely excavated around the remains of the engine and other surviving structures. Some 25 years earlier the rotten beam had finally snapped with part falling down the mine shaft. Grappling tools failed to recover much, so Morton had himself lowered down the mine shaft to seek any missing parts. All the components of the engine including the masonry beam support were carefully numbered, crated up and shipped to Dearborn.

Removing the B&W beam engines from Birmingham did not require excavations, but the carefully taking the entire pumping stations without the citizens knowing their heritage was on the move was the essential. A local engineering contractor did the work, not knowing

WORLDWIDE



The support pillar for the beam of Fairbottom Bobs had to be reduced in height by five masonry courses and the local team had to make a new one from American oak. Photo: Chetham's Library

where the engines were going or who had acquired them. The challenge with the 1811 engine at Lawley St was the sheer weight of the components including the cast iron beam.

At Christmas, 1929, Percival Perry, Head of Ford UK, informed Morton that he was to go to Dearborn to reconstruct the engines in the Edison Institute which was next to Ford's newly completed River Rouge complex. Parts of the plant had been designed in an innovative style by the foremost industrial architect of the day, Albert Kahn. It was the world's largest integrated factory covering 16 million ft² (1.5 km²) on a 1,212-acre (490 ha) site. Ford commissioned local architect Robert Derrick to design his museum but the main exhibition hall extending 400 ft. (120 m) is essentially Kahn's structure as in the factory. The facade is a replica of Independence Hall, Philadelphia. Edison himself had partially opened the Institute in October 1929 just three days before Wall Street crashed. Next to the main museum and extending 240 acres (970,000 m²) is the outdoor museum, Greenfield Village, where Ford re-assembled many historic buildings including much of Thomas Edison's Menlo Park research complex,

By late 1929, Morton had collected for Ford a total of three Newcomen engines, 19 stationary engines including two enormous Boulton and Watt pumping engines from canal pumping stations in Birmingham plus a replica lap engine, two steam generator sets, four marine engines, four early boilers, seven mobile engines e.g. traction engines, two steam fire engines, three steam turbines, four hot air engines, eight oil engines and the Rocket replica, as well as too many minor artefacts to describe here.

the Wright Brothers' workshops, Bennett's watch shop from London, etc. In addition, he built his personal railroad and a lake on which a rebuild of Edison's paddle steamer sailed. Initially a private museum, it opened to the public in 1933.

HENRY FORD, Cont'd pg. 9

WORLDWIDE



Carlton Simmons rests as length of steel barstock is heated in the forge.

U.S.A.

IRON HERITAGE MEETS IRON ART

Zachary Liollo

The Philip Simmons shop has existed in Charleston since the 1930's. Philip Simmons was a master blacksmith who served Charleston until his death in 2009. His work inspired thousands, and he is the only blacksmith featured in the Smithsonian Institution.

By historic contrast, his trade was once common in Charleston to serve industry and transportation. Philip apprenticed as a blacksmith when he was 13 years old, several years after World War I. This shop,

belonging to another blacksmith, was located on the waterfront and served many of the local industries. Freight was commonly moved in wooden wagons, which provided an ample flow of work in terms of horseshoes and hardware. The 1920s represented a time of drastic change as cars and trucks began to compete for space on city streets. In an effort to adapt, many smiths began forging components for truck bodies and repairing frames, engines, and other mechanical systems. Indeed, Philip recounted in his stories of repairing trucks which initially provided an influx of work.

Philip eventually left his original employer and became master of his own forge in the early-1930s. The end of World War II once again introduced new technology to local blacksmiths, which included surplus power tools and electric arc welders. The stick welding process greatly reduced production time and labor costs as opposed to traditional metal joinery. Philip Simmons was quick to adopt this tech-

WORLDWIDE

nology in the 1950s, by which time he was one of the few operating blacksmiths left in Charleston, and he began to tap the ornamental-ironwork market.

The shop at its current location was built in 1969, and is a single room approximately 500 square feet. The structure is wood-framed with sheet steel siding (single sheathed). This type of construction was one that Philip learned in his youth and indicative of the small workshops along the waterfront. The interior space contains a coal-fired forge and a constant current welding machine. The forge is supplied by an electric blower which blasts air from underneath the fire. The forge stand itself is a drum that has been cut so that the top is about three-feet above the slab, and is filled with refractory cement. Behind the entrance door is a modern metal-cutting chop saw with an abrasive wheel. There are a number of hand tools and power tools as well, including angle grinders, chisels, hammers, and anvil tools. Some of these tools were acquired from local industries and businesses that have since vacated the area. There are three anvils of varying age and condition, from 90 lbs to 175 lbs. Steel is commonly delivered in 20 ft standard lengths, and is scattered throughout the fabricating yard. Besides tools, there are steel tables and carts used as work benches, and as jigs for bending steel. There are also several lengths of structural steel H-shapes and C-shapes for the same purpose.

There are several hundred pounds of stoker coal on hand. The coal

is loaded into buckets and carried inside to be burned in the forge. There are stacks of kindling for starting fires. As the fire burns hotter, the coal oil begins to burn, giving off thick white smoke. The blower is turned on, and the blast drastically raises the temperature of the fire. From here, steel can be heated and shaped. The finished designs are often hand-drawn with chalk from paper sketches.

Carlton Simmons, Philip's nephew, continues the age-old tradition of forging and fabricating beautiful wrought-iron pieces. Hand-crafted gates, railings, and other architectural pieces are in high-demand for homes and public spaces. The Simmons Foundation seeks to bring Charleston into the international scene of fine ornamental ironwork. Here, at 30 Blake Street, coal and steel are transformed into finished wrought-iron works of art.

The Philip Simmons Foundation creates a critical link between Charleston industry and art. Open to the public year-round, the site is a modest tribute to one of the blacksmith trade's biggest names. The dedication to preserving Philip's memory also involves continuing the trade through education, tourism, and the construction. Clients range from private individuals to real estate developers and even public entities. Carlton Simmons dutifully carries on the legacy, demonstrating that industry can be synonymous with beauty.

HENRY FORD, CONTINUED

Morton, working with a team of local engineers and builders, started to re-assemble the engines and making any missing parts. Kahn was annoyed that Morton required major changes to the foundations of his exhibition hall to accommodate some of the engines, whilst Morton was annoyed that the ceiling of the finished hall was too low. In one of their few disagreements, Morton had had the new beam for Fairbottom Bobs added to look more authentic but Ford insisted it be planed 'fine and straight'. While Ford was away Morton had it covered with a crude coat of coal tar, giving an appearance that Ford said looked fine. The wagon boiler taken from Ashton Vale does not appear to have survived the journey so the haystack boiler sourced from J & J Charlesworth's Rothwell Haigh Colliery south of Leeds was installed. This boiler may have been used with Old Sarah, a Newcomen engine that worked at the same colliery until 1917 and was dismantled the following year.

The other Newcomen engines, one from Moira in Leicestershire and the other from Windmill End, Netherton in the Black Country, were rotative engines and required the excavation of the museum's floor to accommodate them. In the case of the older engines shipped to Dearborn, Ford required that the engine houses were also re-constructed as near as possible, but it is impossible to say how well this was done since only photographic records appear to survive, plus a few crude drawings by Morton himself. The dozen other engines

acquired from all over England are generally smaller and would have been somewhat easier to remove from their engine houses and ship to America. However, fitting them all into the space available in the exhibition hall must have presented a challenge.

Following the first prolonged trip to Dearborn, Morton had further working stays in 1931 and 1932. By early 1933 he was under pressure from his bosses in England demanding to know what he was up to. On April 1, Campsall wrote to him saying that he was to cease all 'research', to which Morton replied that he had devoted too much of his life to the task and since his job at Trafford no longer existed he regretted the situation. On 9 May he resigned from Ford's, becoming Bandmaster to a local Regiment. He always regretted that Ford had not personally supported him. In 1937 he joined the De Havilland Aircraft company and was appointed Chief Engineer, retiring in 1952. He died in 1966.

Although some items Morton had gathered and shipped were sold off by the Museum in the 1980s, most are still in the exhibition hall where Morton placed them. Without Morton's knowledge and Ford's enthusiasm, our knowledge of the Industrial Revolution in Britain would be significantly less.



The Lancashire hearth, positioning the pig iron and cleaning the tuyeres.

SWEDEN

REVIVING THE LANCASHIRE IRON PROCESS

Bengt Norling

At the end of October last year, another stage of a project named *Knowledge Building – Lancashire Process* was accomplished at the Karmansbo smithy, in Västmanlands, Sweden. The project has been going since 2012 with the aim to resume iron refining according to the Lancashire process. The practical works have been carried out in Karmansbo smithy, which contains Sweden's only functional Lancashire hearth.

The Lancashire method was used with great success in Sweden be-

tween 1840 until 1900 and thereafter to a limited extent for certain iron qualities until 1964. It has its origin back in the British county of Lancashire, where coal was used as the energy source. The technology was transferred to Sweden during the 1830s after it had been developed to reach the acquired high temperatures using charcoal instead of the more expensive coal.

The process aims to lower the carbon content (about 4 %) in the pig iron from the blast furnace to malleable iron (about 0.1 %). Analysis of the refined iron of the project has surprisingly shown that the content of carbon is lower than targeted, while the sulphur content is far too high, causing the iron to be too brittle – a result that puzzles a great deal.

This proves that it is yet a long way to understand the process. With all due deference to instruction books, where available, the process

WORLDWIDE



The rest of the slag is driven out with the waterwheel driven hammer.

requires deep practical knowledge in older refining methods, which seems to be even more difficult to understand. A smithy apprentice had to take part in about 1000 charges under expert advice before he was considered to have mastered the work. The research project has now been doing about 20 charges, without guidance from a master smith. What's left to do, then, is to build knowledge based on practice, combined with use of high-tech measuring equipment and comprehensive analysis.

The financial support has hitherto been coming from the Swedish National Heritage Board completed with voluntary work by the participants. SSAB gives some material support and Degerfors laboratory analysed the results to subsidized prices.

The long-term aim is to build up a base of about three Swedish Lan-

cashire smithies running in working seasons to meet a growing demand for Lancashire iron in restoration works of the 19th century iron constructions. The unique properties of the Lancashire iron is demanded for crucial parts of many of these constructions, for instance the Eiffel Tower, which consists of many supporting parts of iron refined with the Swedish Lancashire method.

More information from project leader **Per Zachrisson**



The Mechanika art factory, a creative space in Kharkov, located in the shops of the former locomotive plant of the late nineteenth century.

UKRAINE INDUSTRIAL HERITAGE RE- VALORIZATION

Volodymyr Kazakov and Viktoriia Patsiuk

The industrial heritage objects of Ukraine can be divided into two main groups: from the pre-Soviet period up to 1917 (including the industrial heritage of Russian and Austro-Hungarian empires); and from the Soviet era, which covered the period of industrialization from the late 1920s to the early 1990s.

Ukraine in the 20th century is first of all the history of industrial development and its industrial heritage is rich both in its age and content. A study of the industrial heritage is based on the provisions of the Law of Ukraine On the Protection of the Cultural Heritage. According to this document, the industrial heritage objects can be united into several groups.

The active industrial sites are unique metallurgical plants and factories, iron, manganese, uranium and coal mines, engineering and transport (for example, fragments of the Catherine Railway in the years 1880-1910), fragments of railways of mines and factories, power plants, including the Chernobyl nuclear power plant, small hydro-electric power stations on the rivers of Pivdennyi Bug, Ros, Ingulets, water mills, towers, reservoirs dams, and underground river tunnels such as the Saksagan river in Kryvyi Rih.

A second group is industrial mountain landscapes with waste dumps, quarries, mining fallings which have formed new landscapes. These natural lands have historical value as the places of human work in ancient times. Such objects are almost 140 years old. For example, there is nothing in Europe like the gigantic hole (over 200 m deep) above the Kryvyi Rih mines. Some of the old industrial landscapes have been transformed into protected areas. The Landscape Reserve Vizirka in Kryvyi Rih includes dumps and three quarries where iron ore was mined and now there are deep lakes with clean water used in recreational activities.



The renatured mine now a landscape reserve of Vizirka in Kryvyi Rih.

Thirdly workers' settlements of old mines and factories are the carriers of special architectural styles and urban development. Architectural objects in industrial cities form compact ensembles of historical centers, such as Sotsmisto, the workers neighborhoods of 1930s - 1960s, built in the constructivism, neo-classicism and rationalism styles in Kryvyi Rih, Kamianske, Kramatorsk, Zaporizhzhia, Nikopol and others. The houses of owners of enterprises and administrative offices, individual burial grounds and necropolises of workers killed at work, places of interest connected with important historical events of industrial development, with the lives and activities of well-known people who worked at certain enterprises, are all considered to be the places of great interest.

It is worth paying attention to the fact that the industrial heritage should include not only natural preserved objects but also the places where they existed, and today have been buried, destroyed or re-cultivated. It is also reasonable to conceive the industrial heritage objects not as separate monuments, but as complexes of cultural heritage. The latter form integral clusters of interconnected industrial objects that preserve archaeological, aesthetic, historical, architectural and scientific value. An example of such clusters is the iron mines of Kryvyi Rih city, which in the compact area have still preserve the look of the late 19th and early 20th centuries. These clusters of industrial heritage include the old mines or their habitats, waste

dumps, land plots above underground caverns, power stations, railways (1884-1898 years of construction), a square or a park, club or palace of culture, a stadium and sports grounds, a hospital, a school, a kindergarten, a mine office, a mine church or its remains.

A clustered approach to the study of industrial heritage objects in Ukraine creates all the conditions for their museum design and creation of landscape-industrial parks, revalorisation, or transformation into a tourist or recreational facility. Thus, the industrial heritage objects have been preserved but filled with new content. Today, bright examples of revalorisation of the industrial heritage in Ukraine include an art-plant "Platform" on the basis of the former silk factory in Kyiv, "Unit.City" on the basis of Kiev motorcycle factory, art factory "Mechanics" on the basis of Kharkov steam locomotive plant. In Kryvyi Rih, a project is being prepared to reorganize the Giant-Gluboka iron mine headframe, 102 m high, into an observation deck from which the whole territory of the largest industrial city in Ukraine can be seen.



A section of the Lachine canal shows the mixed industrial landscape around the locks in 1998.

CANADA

THE LACHINE CANAL: A HERITAGE CHALLENGE

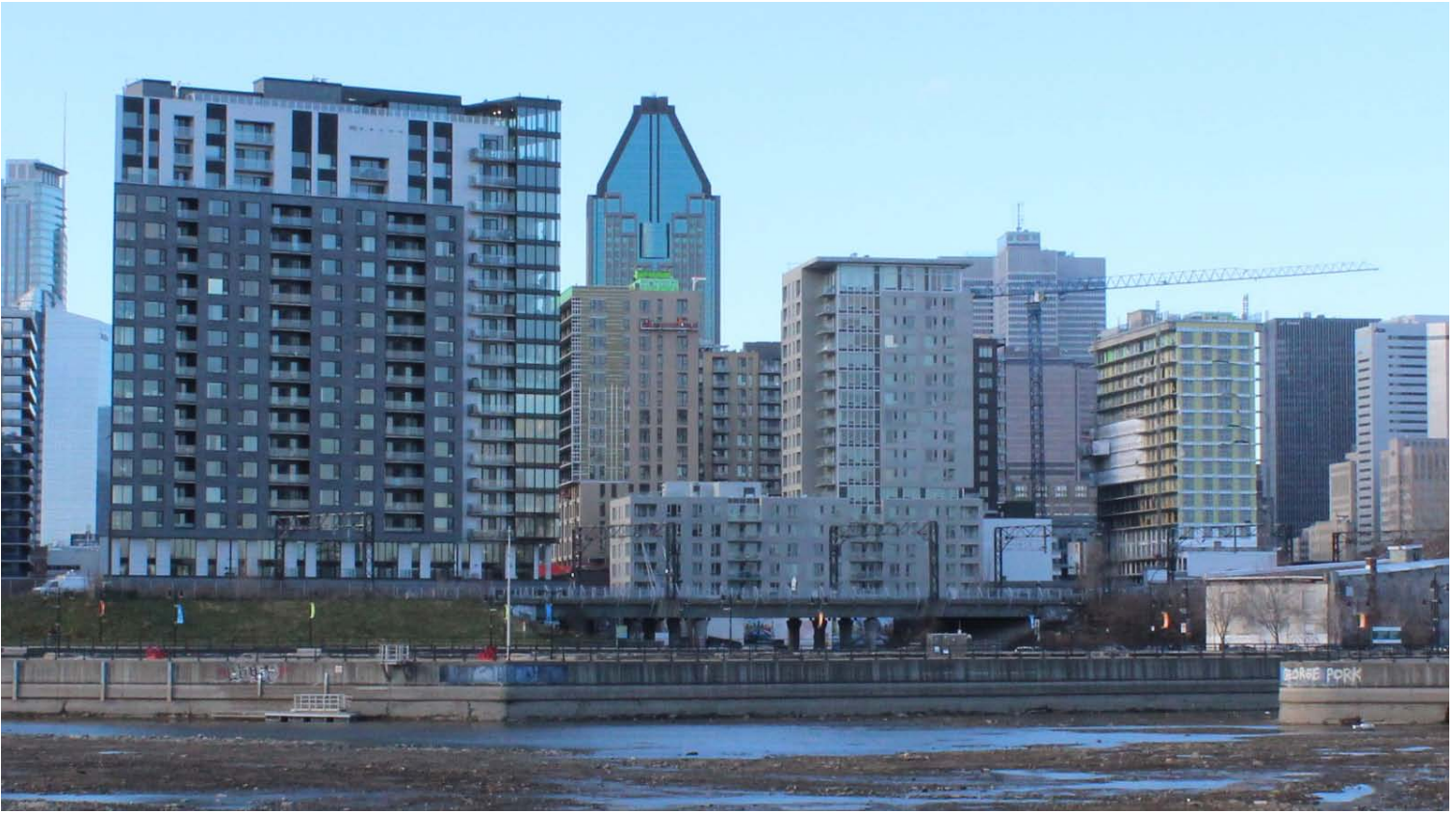
Dr Alain Gelly, Historian, Parks Canada

Located in the heart of southwest Montreal, Canada's second largest city, the Lachine Canal is an exceptional Canadian industrial heritage site (one of Canada's 147 designated industrial sites). It is around 14 km long and features 5 locks; it is one of the nine historical canals administered by the **Parks Canada Agency**, and is visited by 1,2 m people, and close to 4,500 pleasure crafts annually. A significant investment program launched by the Canadian government in 2015 (\$170 million) that adheres to international conservation standards is currently ongoing to preserve the canal's infrastructures and improve the experience lived by the users. At the same time, in the eastern section of the canal's basin, the areas close to downtown Montreal are undergoing an impressive urban renewal. As for the western por-

tion, pressure on the urban territory is to be expected during the next years. The heritage challenge, therefore, is how to maintain the characteristic elements of industrial heritage in a balance with one of the significant waterfront revitalization projects, if not the most important, currently ongoing in the country. To properly understand the current challenge, a brief historical overview of this unique Canadian site is required.

Until 1825, the turbulent Lachine rapids represented a formidable obstacle to ships wanting to navigate the St. Lawrence on their way to the Great Lakes. Open to navigation the same year as the Erie Canal (United States), the Lachine Canal was a key strategic point for Montreal merchants looking to make Montreal the wheat emporium of the continent. This navigable waterway impacted the two communities located at each end. Lachine would see its port functions decline in favour of Montréal as that harbour was able to acquire port installations worthy of this name. While the canal's warehouses and industrial buildings were installed close to the Montreal locks, it was only

WORLDWIDE



Urban renewal around the Peel Basin in 2017.

in the 1840s that the canal would become qualified as the “cradle of modern Canadian industry”. In fact, because of the canal’s 1843-1848 expansion (it would be widened again between 1873 and 1885), it would be given the nickname ‘Lowell of the North’. Aside from the industrial plants located on one of its three hydraulic sites, businesses using other forms of energy (steam and electricity) arrived for its other benefits (access to water for industrial and navigation purposes, strong pool of labourers nearby, etc.).

A unique industrial corridor in Canada, the canal’s factories would produce not only a significant portion of the products the country needed, but they would also export these items around the world. The hub for many large Canadian businesses, and location for multinational installations, its industrial facilities accounted for more than one in five manufacturing jobs in Canada’s industrial metropolis during the interwar period. With its economic activity, the canal would structure the urbanization of the southwest area of the island of Montreal but, more particularly, it would shape its historic identity as a working-class neighbourhood.

Home to the main manufacturing complex of the country’s former industrial metropolis, what was once known as the Smoky Valley underwent a major metamorphosis in the second half of the 20th century. While the opening of the St. Lawrence Seaway in 1959 and the closing of the Lachine Canal in 1970 contributed to the economic decline of the Island of Montreal’s south-western neighbourhoods,

other factors were at play that contributed to factory closures. Indeed, many factories did not shut down until decades later. In 1974, at the City of Montreal’s request, the government of Canada carried out a canal banks renewal program under the slogan ‘a ribbon of water running through a greenway’. Landscaping and a bike path gave this former industrial area a recreational purpose.

When administration of the canal was transferred to the Parks Canada Agency in 1978, the metamorphosis of the industrial landscape and the urban fabric was already well underway. At that time, abandoned factories, backfilled canal portions and increasingly impoverished working-class neighbourhoods punctuated the landscape of this industrial corridor, especially at its eastern end. With its limited budget for the Lachine Canal National Historic Site, the Parks Canada Agency kept its interventions to a minimum during this period, while the Old Port of Montreal Corporation restored the two locks it administers in Montreal between 1989 and 1992.

The early 1990s saw the first wave of industrial buildings being converted into residential units; only those with aesthetic value avoided the wrecking ball. In 1996, via the Historic Sites and Monuments Board of Canada, the Canadian government designated the Montreal portion of the canal as the best location for commemorating Canadian manufacturing. This was merely a symbolic designation, however, as the Agency had nothing but its powers of persuasion to protect buildings with heritage value. In 1997, the Canadian government

WORLDWIDE

launched, with the collaboration of the Government of Quebec and the City of Montreal, an ambitious project to revitalize the canal. The project culminated in the canal being re-opened for boating in May 2002.

The same year, Montreal and Quebec initiated a large-scale project to revitalize the former industrial area of Griffintown in order to attract knowledge economy businesses, similar to what was done at Canary Wharf in London. While the Cité du Multimédia radically transformed this neighbourhood, the reopening of the canal made it all the more attractive to Montrealers. Taking advantage of the accelerating decline of the canal basin's industrial base, which created new brownfields, real estate developers rushed to occupy the lots bordering this waterfront heritage area.

Even though heritage policies have preserved important markers of the basin's industrial past, the landscape of the Lachine Canal is now a true patchwork of development, with working and abandoned factories and industrial buildings converted into condos meeting resi-

dential high-rises and office buildings. Confined to the east until recently, this mixed landscape is now spreading towards the western end of the canal, with an upcoming major real estate project and new brownfields becoming available in Lachine.

In this ever-changing environment, where intense urban renewal of the canal basin is accompanied by a significant investment in restoring the canal's infrastructure, Parks Canada wishes to develop an inspiring vision to revitalize this historic site. In this vision, 'the canal aspires to become a collective asset that is open to opportunities, encouraging dialogue among the living environments', in order to preserve the heritage and spirit of the Lachine Canal Site. However, without heritage conservation legislation outside its administered boundaries, Parks Canada will have to continue working with local stakeholders.



ARGENTINA

TAFÍ VIEJO RAILWAY WORKSHOPS

Dra Arq. Monica Ferrari, Universidad Nacional de Tucumán

Railway workshops were constructed in Argentina to meet the needs for maintenance and repair facilities of private railway companies for their own lines and branches. There are twenty-four in the country that carried out maintenance, repair and manufacture of rolling stock, the most important being in Tafi Viejo, San Cristóbal and Laguna Paiva.

Their development allowed Argentina to escape its dependence on imports, and Tafi Viejo is paradigmatic in its specialization on vehicle repairs, the manufacture of wagons, wheel tyres, component parts of the wagons, tools in general and steam locomotives. The circulation of steam trains was gradually reduced as a result of their progressive replacement by diesel machines from the 1970s.

The summer villa of Tafi Viejo was built in 1900 and Luis Stremiz y Cía began the construction of the railway workshops in 1902. They officially opened in 1910 with the completion of the first buildings. There were few changes to the site until 1934, but from then the increase of the production required more spaces, extra buildings being constructed until 1939.

Function as a structuring idea for architectural organization has been a constant in railway systems and in industrial heritage. The needs of



Talleres de Tafi Viejo, seen from the water tower:

production have led to the materialization of function at a variety of scales, ranging from the organizational aspect of a plant down to the smallest construction detail. Functionality in industrial heritage resulted in the simultaneous development of rationality and utility, configuring a body of concepts that have translated to the design of a plan or the modulation of a façade; and in the need for standardized and prefabricated construction elements. Industrial heritage constituted a system of interchangeable parts, in which each element had its reason for being and practicality had a special participation within the scheme.

TAFÍ VIEJO, Cont'd Next Page

SWEDEN

TICCIH CELEBRATES AN INDUSTRIAL HERITAGE VETERAN

Jan af Geijerstam

On December 26 2017, Lars M. Larsson celebrated his 100th birthday. Since the 1960s, Lars and his wife Karin have worked unobtrusively to preserve, protect and tell about the oil refinery at Barrön in Lake Åmänningen, directly adjacent to the world heritage site of Engelsberg ironworks. Oljeön or the Oil Island, as the plant is usually called, was named the Industrial heritage site of the Year in 1999 by the Swedish Industrial Heritage Association (SIM)/TICCIH Sweden <http://www.sim.se/1999-oljeon>. Lars is a devoted member of SIM and thus



Karin and Lars M. Larsson in 2011. Photo www.oljeon.se

also of TICCIH. He is today probably the oldest member of the two organisations. TICCIH joins SIM in congratulating Lars M. Larsson and is proud to present him with honorary membership.

Lars was born December 26, 1917. His father was an agricultural inspector and his mother was the daughter of a train master. After a few years in southern Sweden, the family moved to Oljeön in 1923. Lars's father Werner Larsson became the last CEO of the factory, which closed in 1927. Lars is today one of the few who remembers the factory in work. It is today considered to be the last fully retained oil refinery in the world.

Lars, with an engineering exam, had a long career in engineering with different Swedish steel and mechanical companies and also work abroad (Belgian Congo, Germany, Belgium, France, Cuba, Austria, Finland). Since retirement in 1982, the task of promoter of the Oljeön has taken most of Lars's time. He has also worked as a certified guide, not least at the Engelsberg ironworks world heritage environment.

Together with their children, Karin and Lars have been active in the network of European oil museums and he has conducted a number of study travels to oil museums around the world. Karin passed away during the spring of 2017 and left Lars in deep sorrow.

TAFÍ VIEJO, CONTINUED

The functional organization of the Tafi Viejo workshops responded to a typical layout of numerous facilities, divided into three basic areas: warehouses, workshops and support buildings; in which a skilful arrangement of buildings corresponded to the stages of the development of the activity. A rational sequence of the production process was also expressed, to reduce the cost of time and movement, helped by a network of 15 km of rails within the precinct, that allowed the transfer of the rolling stock through the different manufacturing sequences. The zoning is clear and can be distinguished by the stores to the north, the workshops to the south, and the supporting buildings adjacent to the perimeter walls. The latter comprised the general administration and administration of warehouses, medical offices, infrastructure and services (sanitary, changing rooms, stores and small workshops, bicycle sheds).

The architectural language presents certain elements such as the exposed brick wall encloses a series of industrial buildings - one that became a canonical experience in most industrial establishments - to which is added the shed type with corrugated iron sheets and glass supported by metallic trusses, borne on steel joists. With these elements a first architectural typology was formed with an elongated

rectangular plan and a pitched roof both for the stores and workshops. During the 1930s it was used in the construction of new workshops and in the remodelling of some of the existing ones. A second typology based on the consecutive arrangement of sheds with saw tooth roofs was used for the construction of the locomotive workshops. In all of these, 19th century technology in the use of glass and metal structures was clearly expressed in all its variants: joists, composite beams and columns, and Polonceau beams. A true landmark, a symbol of progress, is expressed in the outstanding volume of a brick chimney in the foundry which rose from the floor through the roof.

Historical and technological evolution at the Talleres de Tafi Viejo can be read over time with a high degree of authenticity, as well as with the English aesthetics and Art Deco in the architectural language of its buildings. This site is a tangible testimony to the railway history of steam traction in Argentina, and constitutes a significant and emblematic element from the social historical perspective of the country.

This paper was presented at the Sixth International Congress of Railways, History and Heritage in Mendoza, Argentina: see [Conference Report](#)

WORLD HERITAGE EXPERIENCES



Blaenavon Ironworks, established in 1786.

U.K.

BLAENAVON INDUSTRIAL LANDSCAPE, WALES

Dr Peter Wakelin

Eighteen years ago, Blaenavon Industrial Landscape was inscribed as a World Heritage Site. Much has been achieved in conservation and presentation of the site but changing cultural and economic circumstances continue to pose new challenges.

For all World Heritage Sites, changing times make it essential to regularly review and update Management Plans. A new Management Plan is currently being developed for Blaenavon. As someone who worked on its first, when the nomination was being assessed in 1999, I have found contributing to the third Management Plan two decades later

with Chris Blandford Associates an opportunity to reflect on just what has changed.

Blaenavon Industrial Landscape is a place where people live and work as well as a monument of industrial heritage. It is a large area, 33 km², and it includes open uplands, farmed valleys, former mines and quarries and their waste tips, waterways and railways, a small town and dispersed settlements.

Why have circumstances changed between plan periods? The first reason is a positive one, that projects and initiatives set out in earlier Management Plans have been completed successfully. An example is that the iron company's elementary school of 1816, which was derelict in 2000, has been repaired and turned into a World Heritage centre. Important conservation projects have been completed at Big Pit and Blaenavon Ironworks, essential repairs have been carried out to the embankments of the canal, the railway has been reinstated further

WORLD HERITAGE EXPERIENCES

along its original route, and the early iron bridge and other landscape features have been consolidated. Overall, the heritage assets of the site are in a better condition than ever before.

Sadly, conservation needs will rise again from time to time. The most pressing of these, identified as a priority in the new draft Plan, concerns the mansion of the ironmasters. After this fell out of use as a residential home for the elderly and its private owners have left it to fall into a decay – there are already hope for creative solutions under new ownership. Other properties in the town that are in poor condition will now be sensitively repaired and reused with new funding from the United Kingdom's Townscape Heritage Initiative. Threats to the subtle archaeological evidence on the open hillsides concern the growth of bracken and the increase in antisocial activities such as driving off-road vehicles and dumping rubbish. The Plan requires these will be tackled by monitoring and reporting crimes and building closer relationships with farmers. Throughout the World Heritage site, the partnership will develop its regular assessment of risks to heritage so that problems can be spotted as they develop.

The Blaenavon World Heritage Site Partnership led by Torfaen Council has until now been made up of 11 organisations, including local councils and national heritage bodies. Following real success generating voluntary activity in the area, the draft Plan proposes bringing voluntary heritage groups, too, to the decision-making table. On the other hand, many partner organisations now find it a challenge to maintain the governance of the partnership owing to the reductions in staff brought on by austerity in public financing. The new Plan responds to this by streamlining the number of working groups that manage the site from six to three; a change that may also make co-ordination easier.

The national and international policy background has evolved remarkably since the last Plan, in particular with the introduction of commitments to sustainable development. These are expressed in UNESCO's 2030 Agenda, which emphasises the relevance of World Heritage to broader economic, social and environmental values, and in the Welsh Government's Well-being of Future Generations Act (2015), which calls for long-term thinking and collaborative, integrated policy to improve prosperity, resilience, health, equality, community and culture. The World Heritage site has always been managed for sustainability and well-being, but the new Management Plan forges explicit connections with broader policies, including the well-being strategies of the local councils.

A continuing priority is to enhance tourism and its associated economic benefits. Like many former industrial powerhouses of the South Wales coalfield, the town of Blaenavon has continued to struggle economically. The new Plan therefore builds on the achievements of the last few years in creating opportunities from heritage. This means building on the success of the main heritage attractions and at the same time developing the connectivity between them and improving the tourism offer in the town, so that visitors stay longer and



Blaenavon works school after conversion to the World Heritage Centre, 2008.

spend more. Another strand is to improve and market the excellent opportunities for outdoor leisure in the Blaenavon landscape, particularly walking and cycling linked to the Brecon Beacons National Park. The Plan will also seek more overnight accommodation in the area to maximise visitors' economic impact.

The aspirations for the new Management Plan are summarised in the new Vision Statement for Blaenavon Industrial Landscape, which links caring for the industrial heritage to the aim of enhancing opportunities: 'The Blaenavon Industrial Landscape is cared for and presented so that future generations may understand the outstanding universal contribution South Wales made to the Industrial Revolution through exploring, enjoying and learning, thereby contributing to the economic, social, environmental and cultural well-being and prosperity of its communities.'

Looking back, that first Management Plan of 1999 was a simple document compared with today's expectations. At just 83 pages long, it was written speedily with very few contributors. The second plan grew to 179 pages. The latest version, produced after many consultative meetings, has been streamlined back to 128 pages by Chris Blandford Associates. It will shortly go out to full public consultation.

Contact the author

MODERN INDUSTRIAL MUSEUMS



Museum of Railway in Silesia is a large European-scale railway museum established in 2005 in a historic depot of 1908. The Museum is located in a railway site of over 3,5 h with preserved railway infrastructure, depot buildings and technical facilities. The collection covers over 120 rail vehicles from 1880 until the 1970s. It is visited primarily in a historic train ride along a Steam Engine Route within the Museum. The Museum has been expanding its offer of railway tourism as a result of the hard work of its specialists in maintenance and overhauling historic rolling stock.

POLAND

FOUNDATION FOR THE PROTECTION OF SILESIAN INDUSTRIAL HERITAGE

Piotr Gerber

The process of economic transformation in Poland that started with social and economic reforms at the end of the 20th century resulted in closing multiple historic industries and, in some instances, entire industrial regions. The liquidation of tangible traces of Poland's industrial development has not been accompanied by any reasonable plan to retain the most important evidence of Poland's economic development. Industrial heritage continues to exist wherever there are the few facilities using manufacturing processes that are often archaic.

Steelworks, mines, textile factories and other industrial facilities were for years the pride of their employees and of the citizens living nearby. But along with the economic transformation process, the facilities started to become examples of technological backwardness and low quality of the inhabitants' lives. Today it has become exceedingly difficult to find the silhouettes of blast furnaces, mine shafts, cooling towers or brick chimneys of former boiler houses in the landscapes of Polish cities.

Despite a growing interest in industrial heritage, the liquidation process of the last evidence of the industrial history of industrial regions has progressed. Important, often the last, examples of industrial activity keep being closed or destroyed. This is what has been going on with the historic closed mines in Upper Silesia.

The **Foundation for the Protection of Silesian Industrial Heritage** was established by the author in 2007 to ensure the active protec-

MODERN INDUSTRIAL MUSEUMS



The historic Grain Mill in Dzierżoniów was built in the 1840s and operated on water energy. After World War II it was managed by the Red Army and afterwards used by various state-owned companies. Without modernisation and major changes in the equipment the Mill operated by the end of 2016, a complete image of the milling technology of the 1930s. The Mill will be transformed into a Grain Milling Museum, an operating facility with complete historic production equipment of the 1930s.

The first successful zinc melting in Silesia was made in 1798 and zinc soon found a number of applications. The opening in 1834 of the Wilhelmina steelworks in Szopienice was a breakthrough event and at the beginning of the 20th century the company produced 25,000 tons of zinc annually and providing jobs for over 2,100 people. It was closed in 2002. The Zinc Metallurgy Museum 'Walcownia' was opened by the Foundation in 2016 with the original Rolling Mill exhibiting a complete production line, as shown in the photo and a collection of 120 historic industrial engines dating back to 1903-1970.



MODERN INDUSTRIAL MUSEUMS

tion of industrial heritage in Upper and Lower Silesia. The operations pursued by the Foundation are of varying nature. The Foundation has been taking up activities in the research of industrial history in Silesia (a number of publications), practical protection of tangible industrial heritage, as well as education on economic development.

The most important aspect of the activities of the Foundation is the protection of selected technical facilities characteristic for Silesia. The protection is achieved primarily by transforming preserved facilities into museums. This method of protection has been made on the basis of various models.

The selection of the protection mode is primarily intended to ensure maximum protection and the best preservation of the original and authentic nature of the historic facility. When selecting a facility to preserve, consideration is given to facilities of special importance for the region and those representing the most important industries that developed in Upper or Lower Silesia.

Now the Foundation operates the Museum of Industry and Railway in Silesia in Jaworzyna Śląska, established in 2005, and the Zinc Metallurgy Museum in Szopienice-Katowice, opened in 2016. Other museums are being prepared: the Museum of Silesian Porcelain in Tułowiec, the Museum of Agricultural Technology in Piotrowice Śląskie, the Railway Museum in Dzierżoniów as a branch of the Museum in Jaworzyna Śląska, and Museum of Grain Milling in a historic mill in Dzierżoniów.

Museum of Railway in Dzierżoniów is a branch of the Museum in Jaworzyna Śląska which will exhibit rolling stock from World War II and afterwards. There are already regular rides to the depot in Dzierżoniów where a collection of historic rail engines is on exhibition.

Museum of Silesian Porcelain is in Tułowiec, a village with a rich tradition in the production of porcelain. The Museum is being prepared at the Porcelit porcelain production facility established in 1886, before 1945 the factory among the largest porcelain manufacturers in Silesia. After World War II, production focussed on popular inexpensive porcelite products. The adapted interiors of the factory will house collections of porcelain from the most important Silesian porcelain factories. The factory premises will house displays showing the porcelain production process. The exhibitions will be organised as workshops accessible to visitors. For collectors, it will be a place to organise conferences, meetings and auctions of historic porcelain.

Museum of Agricultural Techniques in Piotrowice Świdnickie The Manor in Piotrowice Świdnickie was constructed in 1585 - 1590. 1945, the estate of Piotrowice was ruined and no longer used and until 2003 the farm and the Manor were managed by the State Farm System. Now the Manor and the farm are being adapted to the planned Museum of Agricultural Technology in Lower Silesia.

A 'living farm' is being developed to display not only the history of agricultural development but will also present life on the farms. There will be barns, pig sties, stables, poultry houses, a granary and a smithy, an opportunity to see bred animals typical for the history of Silesian agriculture, while in the nearby fields, plants will be grown that were characteristic for the economy of Upper Silesia from the turn of the 19th centuries such as flax or hemp.



Since 2015, with the Tkt48/18 (seen here on the route to Wrocław), a steam engine restored in the museum workshops, the Museum has been arranging regular rides for tourists using historic rail cars of the 1920s to attractive locations in Silesia.

EDUCATION & TRAINING

CZECH REPUBLIC

SUSTAINABLE DEVELOPMENT AND INDUSTRIAL HERITAGE

Jana Horrocks, Czech Technical University, Prague

Industrial heritage education has been offered by the Czech Technical University in Prague (CTU Prague) since the Research Centre for Industrial Heritage (VCPD) was established in 2002. It was an autonomous unit but in 2010 it became an institutional part of the Faculty of Architecture. The key activity of the VCPD is the systematic documentation and research of industrial heritage, technical and industrial monuments in the Czech Republic, but it also runs activities to develop the awareness of industrial heritage, both for public and students of architecture in master and PhD programs. VCPD initiated the national platform for the conservation and adaptive re-use of industrial heritage, Vestiges of Industry, which has grown into an international biennial series of events in which many TICCIH members have enjoyed.

Several founder members of VCPD have created full PhD study programs at the Faculty of Civil Engineering. The Sustainable Development and Industrial Heritage program was established in 2007. Students deal mainly with industrial heritage on the territory of the Czech Republic and in a European context. Besides basic issues such as documentation, defining values of industrial heritage and preservation principles, the education is focused on the adaptive re-use of industrial heritage objects, sites and brownfield revitalization, which require an overlap with construction, environmental and sociology topics.

Most of the program students are graduates of masters studies in architecture or art history, but the program is open to other graduates of related fields of study. Dissertation themes has ranged from industrial archeology and historical constructions to temporary re-use,

adaptive re-use and urban regeneration, and has covered brewing, textiles, machine production, mining and railway transport. PhD students are also involved in teaching at the bachelor and masters level, together with their supervisors. Most of them have become bearers of the idea of industrial heritage preservation and re-use, wherever they continue their professional carrier – as heritage conservation specialists, lecturers, architects, planners etc. The education provides them with extended theoretical basis to get engaged in developing strategies of urban regeneration, cultural heritage preservation and revitalization; contribute to public administration, educational and research activities of universities and research bodies.

The first international event of the study program was PhD conference Industrial heritage - on the edge..., organized between the Research Centre for Industrial Heritage and the Department of Architecture was held in Prague within the 6th International Biennial 'Vestiges of Industry' in October 2011 - More than fifty PhD and master students from the Czech Republic, Slovakia, Poland, Germany and Italy introduced their work in adaptive re-use, heritage conservation, regeneration strategies, bottom-up initiatives, alternative and temporary re-use. The conference was followed by visits to post-industrial sites close to Prague including a former piano factory, an abandoned iron works and an open-air coal mine museum. The idea was originally kindled during this event to contribute sharing knowledge and experience internationally, starting with education.

The PhD program **Sustainable Development and Industrial Heritage** is currently run in the Czech language. However, the English version is being developed to open the studies up to foreign students. Applications opened this month to start a course of study in October. The fruits of cross-border cooperation (not only) in the field of industrial heritage preservation in European context could be represented for instance with the Czech-Saxon project of Montanregion Krušné hory – Erzgebirge.

**RENEW YOUR TICCIH
MEMBERSHIP FOR 2018 TODAY!**

WWW.TICCIH.ORG/JOIN-TICCIH

TICCIH: The International Committee for the
Conservation of Industrial Heritage

TOURISM, TECHNOLOGY AND HERITAGE

Stefan Poser, Helmut Schmidt University, Hamburg

Since cultural tourism has become increasingly relevant for Portugal, it makes sense to analyse this topic from the perspective of the history of technology, combined with an approach from conservation studies. The aim of this course/workshop for PhD students at the Universidade Lisboa and Universidade Nova Lisboa was to analyse the societal impact of technology-based tourism and to discuss the results for decision making in conservation.

Tourism – especially the mass tourism which came up since the mid-20th century – is based on technology. It has become a typical leisure activity of members of consumer societies. Meanwhile tourism is one of the most important sectors of the economy and is of global occurrence. During vacation, millions of people migrate for a few weeks – sometimes observed as barbarian invasion by inhabitants of tourist regions. Indeed, cities are growing especially for tourism. The English city of Brighton belongs to the first tourist cities: a small town at the sea that developed to a place of vacations and leisure for aristocratic British families in the 18th century. When a railway line to London started operation in 1840, the small city became a famous tourist destination and began to grow on a large scale. Members of different strata of society arrived for vacations and changed the face of the growing city. Within the last 60 years, similar developments have taken place in the Alp Mountains or at the Spanish Costa de Sol.

Since many contemporary tourists are interested in old buildings and the relics of history, tourism promotes activities to preserve old city centres and to keep cities attractive for visitors. On the one hand the aim of ‘making a city fit for tourism’ can really help conservation. This holds for the preservation of buildings as well as for objects in museums and their restoration. Whereas churches, castles and rich houses have been in the focus for long time, industrial heritage gained more influence due to de-industrialisation since about 20 years. Old factory halls or power plants such as the Tejo Power Station in Lisbon have been changed to in-situ museums or were reused for touristic purposes. They became sites of cultural tourism; even places such as the Chernobyl Power Plant and its polluted surroundings developed into interesting destinations of ‘dark’ tourism.

On the other hand, tourism means increasing traffic and environmental pollution which contributes to the process of degradation of old building structures. Besides economic benefits for the tourist regions, tourism is a reason for rising prices and social tensions. Some tourist cities such as Venice had been so successful in attracting tourists that they lose quality of life of local inhabitants. Dealing with more than 20 million visitors per year, the city has changed to a venue only for

tourists; normal life has disappeared to the mainland.

The first part of the workshop at the Department of Conservation and Restoration was dedicated to the history of technology, the second part to conservation. Approaches from different fields of scholarly investigation were analysed and the development of mass tourism in Europe was compared, based on case studies from Germany, Portugal, and Sweden. In a next step, the influence of technologies on booking, travelling and accommodation were analysed as well as the transfer of the concept of mass production to the field of tourism. The second part of the workshop focussed on sites of industrial heritage and different concepts to take care of these relics. The role of old and new technology as tourist attraction was investigated: if technical artefacts become attractive sites for tourists – what does this say about the social impact of technology? This role of technology for society was a key question for discussion. Different concepts of conservation, restoration and conversion of technical monuments make clear that it is more demanding to protect industrial sites and their machinery than other buildings.

The last topic of the workshop was relics of past periods of tourism: tourism itself has a history. This can be studied in situ by visiting old touristic infrastructures such as hotels, mountain railways, or even airports. This raises the question if there is a heritage of tourism already. But different types of infrastructures have different chances to be preserved: in case of hotels these are the opulent palaces from the 19th and 20th centuries, whereas most of the typical hotels of the first period of mass tourism have already been replaced by more comfortable ones. Many mountain railways first erected for transportation have ‘survived’ by becoming tourist attractions. Although some airports are well designed and suitable to be preserved as heritage, this is not in the focus of public discussion.

The workshop was based on a cooperation of Universidade Lisboa and Universidade Nova Lisboa in an international research project on the history of plastics (FCT - Fundação para a Ciência e a Tecnologia, Portugal), in which Universiteit Maastricht (Netherlands), and Helmut-Schmidt-Universität, Hamburg (Germany) are involved. The program for PhD students of conservation and restoration at Universidade Nova de Lisboa combines the student’s individual projects in laboratories for materials conservation (specialized on plastic items) with courses and workshops on different subjects of relevance for conservation and restoration. The institute in charge, the Departamento de Conservação e Restauro e REQUIMTE, Faculdade de Ciências e Tecnologia, links research and teaching directly, especially in the laboratories. The theoretical part of the program includes units on the history of technology.

Thanks to Maria Elvira Callapez, Joana Lia Antunes Ferreira, Maria João Melo, and Ana Ramos.

Contact the author

XVII TICCIH CONGRESS



The Villaseca lift stopped at the end of 1998.

CHILE

XVII TICCIH CONGRESS SANTIAGO DE CHILE, 2018

Jaime Migone, President of TICCIH Chile and Conference Director

Participants of the XVII TICCIH Congress Understanding the Past, Making the Future Sustainable, on the 13-14 September, 2018, will visit the famous funiculars and lifts of Valparaíso. The biggest port on the Pacific coast until it was dealt a death blow by the opening of the Panama Canal, the city is now working to recover the transport system which made it famous. See the [congress website](#) for all the details.

Valparaíso is the main port of Chile and was the most important of the South Pacific until the opening of the Panama Canal on August 15, 1914, from when this city began a very slow and permanent decline in which it continues to this day. When using the Panama Canal instead of the Magellan Strait, all trade between Europe and the west coast of

North America was shortened by more than 15,000 km and several weeks of navigation.

This was an impact that affected very deeply the city and also its extraordinary urban transport system, the elevators and funiculars. These were the only way by which the city had been able to expand once the narrow shore plain between the Coastal Andes and the Pacific was completely built upon by the middle of the 19th century.

The funicular Concepción opened in 1883 with a water counterbalance operation between its two cars. During a construction boom they reached 30, the last of them, the funicular Perdigones, was made in 1932.

One of the most interesting features of this transportation system was its complete design, management and construction by private entrepreneurs, through highly technical complexities, to achieve a great distance and considerable height. This aspect is shown in that 25 of them are already installed by 1914 while only the remaining five were completed after the opening of the Panama Canal in 1932.

XVII TICCIH CONGRESS



Left: The Monjas lift closed at the end of 2005.

Below: A commemorative stamp celebrating 100 years of the funicular Concepción, currently being restored.

By the second half of the 20th century the funicular system was slowly entering economic obsolescence due to its low use, and many of them were broken and being dismantled. This decline parallels what happened to the whole city, unlike the port which always played a key role in the country's economy.

The deterioration of the city, evident and visible today, meant that in 1995 there were only 15 lifts running and another 15 were totally lost. Of these 15 working lifts, the municipality took over five of them after the owners' bankruptcy. The panorama continued to decline and in 2010 only six were functioning and 9 had completely stopped.

The city of Valparaíso was declared a World Heritage Site on July 2, 2003, whose protected area partially includes this set of elevators and funiculars. The whole area was previously declared a Historical Monument by Chilean law in 1989.

Fortunately, in 2010 and on the occasion of the celebration of 200 years of Chile's independence, a special economic fund, managed by the Ministry of Public Works, was created for their repair and appreciation. With these resources, in the first stage through public subscription, tenders were made for the development of restoration projects of nine of them. Within this group I have led the development of the projects of the Monjas and Villaseca funiculars, which are already in the initial phase of execution of their work.

The Monjas and Villaseca lifts were studied by a multidisciplinary

team of more than 25 professionals during two years of work in order to be able to put forward projects of valuation, so that they maintain as far as possible their characteristics and heritage values, including the original machinery. In both projects, a large part of the drive system has been maintained and the assembly recovered its original operation.

The objective of the restoration of this set is to re-incorporate them into the public transport system of the city, in an integrated way and with a single tariff, for which a non-profit corporation has been created for their proper management and a system administration that will include all the elevators and funiculars.

The revival of this important industrial heritage, with its roots in the 19th century, is undoubtedly an important event for the city of Valparaíso, which requires a great effort to try to regain the splendour that it formerly had.



TICCIH CONFERENCES

ARGENTINA

THE SIXTH INTERNATIONAL CONGRESS OF RAILWAYS, HISTORY AND HERITAGE, 8-10 NOVEMBER 2017, MENDOZA, ARGENTINA

Gràcia Dorel

This meeting was organized by the local faculties of architecture with TICCIH Argentina, chaired by Mónica Ferrari, under the auspices of the International Association of Railway History whose president, Henry Jacolin, inaugurated the event.

Most of the speakers were from Argentina, but there was a significant Brazilian delegation, some Chileans and Europeans (Spanish, French); a young Algerian PhD student and an industrial heritage expert from New Zealand completed a panel of speakers, who could have been joined by some Chinese experts if, at the last moment, they could have obtained their visa.

The originality of this meeting lay in its notable heritage dimension. We not only talked about the sources gathered for industrial archaeology - excavations, iconographic documentation and archives, oral testimonies -, but also discussed music as a resource, in a particularly original communication, using the lyrics of songs in a very convincing way.

Another originality was the contribution of students who joined in their work an intimate knowledge of the environment with a breath of youthful ardour. It would be highly recommendable to introduce similar works in later conferences.



The Museo de los ferrocarriles in Buenos Aires

All the work of the Conference will be online on the **TICCIH Argentina** website. We should stress its most important contributions: the role of the railroad in the construction and development of the country; the technical feats this represented, in particular crossing the Andes; the participation of Europeans, both in scientific and technical investment and as specialists; and the difficult management of the heritage that still exists and that every day is more and more at risk. Both the railroads which are testimony to foreign domination and those resulting from colonization must be studied without prejudice. It is time to take on this legacy and look for how to preserve it.

SPAIN

TICCIH THEMATIC CONFERENCE ON THE WATER HERITAGE, 13-14 April 2018, BARCELONA

The heritage of the water industry is one of the most remarkable in its engineering, architectural and technological interest, and as the means of averting a sanitary crisis which threatened to make urban life intolerable it is also of profound historical importance. TICCIH's thematic conference will be hosted by the Museu Agbar de les Aigües. Professor Martin Melosi will give the keynote presentation followed

by seven international experts who will put the historic infrastructure built to supply water and to remove and treat waste into its historic context.

Download TICCIH's comparative report **The Water Industry as World Heritage**.

Inscription and conference program. Discount for TICCIH members.

A poster session will highlight projects and research relevant to the theme of the conference. Proposals for posters (title and synopsis) should be sent to the **conference organisers** before March 31.

CONFERENCE REPORTS

INDIA

INDUSTRIAL HERITAGE IN INDIA: KNOWLEDGE, CONDITION AND SIGNIFICANCE

Workshop at the ICOMOS 2017 General Assembly in New Delhi, December 2017

Dr Miles Ogglethorpe

This special session on industrial heritage was arranged by Moulshri Joshi, TICCIH National Representative for India. The event was supported by the National Institute of Urban Affairs, who hosted it in their offices situated in the heart of ICOMOS conference venue, the India Habitat Centre.

The meeting room would have comfortably accommodated 40 participants, but by the end, over 80 people squeezed in, draining surrounding rooms of furniture and reflecting an interest in industrial heritage that significantly outstripped expectations. The attendees who managed to get in were not disappointed. The programme opened

with an introduction to the industrial heritage of India from Moulshri Joshi, and was followed by presentations on a wide range of topics including zinc smelting, iron making, Dutch factories, railways, power plants and ship/boat building. The event ended with sessions discussing thematic concerns, and the way forward for industrial heritage in India. Moulshri Joshi also presented for display two printed copies of the first Industrial Heritage Inventory for India (see Worldwide). The hope is that this will help in the struggle to achieve much wider recognition of the value and importance of industrial heritage in India.

There is no doubt that the session was hugely successful. In addition to being much larger than anticipated, its audience was vibrant and young, reflecting an interest amongst emerging practitioners and academics within India. However, it also reflected the scale of the task affecting planners and heritage professionals - there is some extraordinary industrial heritage to be found across the country, but it is not sufficiently valued or recognised, and much of it continues to be under significant threat. The hope is therefore that this session, and specifically the young audience that it attracted, can help address the dangers currently afflicting Indian industrial heritage, whilst also realising the many opportunities that this type of heritage can offer.

COMING SOON

INTERNATIONAL CONFERENCES AND CONGRESSES

2018

EUROPE

European Year of Cultural Heritage 2018
Call for proposals: eacea.ec.europa.eu

MEXICO

Industria, Patrimonio y Memoria: Congreso Fundidora Monterrey, 9-11 May, Monterrey, NL
Call for Papers until 15 March
congresofundidora2018

COMING SOON

SPAIN

The International Heritage of the Water Industry: Historic Values of Supply and Treatment Networks; TICCIH thematic conference 13 and 14 April, Museu Agbar de les Aigües, Barcelona. Poster session, send proposals around the conference theme to the **Scientific Committee**.

www.museuagbar.com

U.S.A.

SIA 47th Annual Conference, 31 May - 3 June, Richmond, Virginia.

Call for Papers until 15 February

www.sia-web.org

FRANCE

La Fête du Patrimoine Industriel, 8 July, Alsace, Lorraine, Champagne-Ardenne, Franche-Comte, Rhone-Alpes.

patrimoineindustriel

BELGIUM

6th International Congress on Construction History, 9 - 13 July, Brussels.

6icch.org

FRANCE

ICOHTEC 45th Symposium in St Étienne, 17 - 21 August.

Call for Papers until 5 February

icohtec.org

CHILE

XVII TICCIH Congress, the first in Latin America.

13 and 14 September: Congress, Universidad Central de Chile, Santiago.

15 September: Closure and Visit to Sewell World Heritage Site

Call for Papers until 15 March 2018

First registration until 15 June 2018: TICCIH Members US \$250, General Public US \$300, Students US \$80

patrimoniointustrial.cl

IRELAND

World Canals Conference, 10 - 12 September, Athlone.

wccireland2018.com



WWW.TICCIH.ORG