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Moskoks coke plant in Moscow, not really known even for many locals. What we see here is the very short moment after the hot coke was pushed out and the worker is cleaning the chamber for further filling. Photo: Viktor Macha

# OPINION

## DOCUMENTING THE UGLINESS

***Viktor Macha***

It was some time in the late 90s when I found out that heavy industry would inevitably become part of my life. I was 15 years old and my parents took me to the Beskydy mountains in Central Europe for our summer holidays. Thanks to road works and detours we suddenly ended up in the Czech town of Trinec with a big, dark steel mill rising above the river bank. Even though I hadn´t the slightest idea what this rusty monster was, I knew from the very first moment that this was it. It was so overwhelming and fascinating. That smell, the smoke, the rumbling sound, everything. A feeling which is hard to describe, somewhere that I simply belong.

Several years passed and I bought my first camera. With nothing else in mind and without any training in photography I started my ongoing project. The beginning was tough. Being still at university with completely different specialisations (theology and the science of religion) I was borrowing my parent´s car every weekend and driving around the Czech Republic documenting the mining heritage. As I ran out of sites pretty soon (plus the mines become very similar after several dozen) I expanded to neighbouring coun-

Kosaya Gora ironworks, south of Moscow: Casting house during the tapping of a small capacity blast furnace made for ferromanganese production. Casting into a sand pit is an ancient process of iron making which doesn´t now exist anywhere in Europe. The intense heat was unbearable. Photo: Viktor Macha

tries with the same approach. With hundreds of headframes and pits in my archive I slowly moved to document the iron and steel industry, a much more challenging field in all possible ways. And I am not speaking about the difficult and constantly changing light, grease and dust on your camera and clothes, but mainly about the permissions.

Getting permission has never been easy, but it´s become painfully hard in recent years. While Eastern Europe is still not familiar with the concept of industrial photography, the West is starting to be very suspicious thanks to constant terrorist threats and environmental issues. The hot steel and smoking coke plants are simply not compatible with the utopic concept of green, modern Europe. In other words, getting permission from one French mill is worth ten from plants in the former Soviet countries. That´s also why I am spending my free time in Eastern Europe in recent years. And to be honest, it´s not only easier, it´s also more fascinating. Ancient blast furnaces beyond

# OPINION



Above: Krivoj Rog iron ore basin: My beloved part of Eastern Europe. I got the chance to visit this beautiful mining landscape twice and already I'm thinking of a third return. The ore has been mined since 1881 and looks like it will last forever. Photo: Viktor Macha.

Left: The hot strip mill in Sharon, Pennsylvania, is the last active fragment from a once huge steel mill which started operations in 1840. By the end of 1990s most of the works were already gone. Photo: Viktor Macha

Serov is an utterly remote town in northern Urals literally in the middle of nowhere. However, the local blast furnace site dates back to 1888 and, with only very few upgrades since its construction, belongs among the oldest active sites in the world. While the ore is charged via the strange looking elevators in the foreground, the coal is supplied by aerial ropeway. Photo: Viktor Macha

the Urals, incredibly old workingmen's settlements in Upper Silesia or huge and still active (!) open-hearth steel shops near Dneprop-etrovsk help us understand how Western Europe used to look, many decades ago. An industrial culture that is disappearing slowly.

On the other hand travelling east isn´t always that convenient. Horrible and endless roads into nowhere, bizarre accommodation in creepy towns, very sharp security guards and communication barrier are just part of the daily troubles.

However, it is always worth the effort and I will never regret a single day on a trip. Like my journey to Donbass in Ukraine last year during the civil war. Not really comfortable passing military checkpoints on the way along the battlefront, but I would go there again immediately. Giant Soviet combines are terrifying yet visually outstanding. A single plant giving jobs to over twenty thousand people sounds almost unreal these days. They are calling it 'social responsibility' in Russia, avoiding the automation of processes just to offer more jobs. But who knows.

# OPINION

Until today I've visited more than 200 steel mills in more than 25 countries worldwide. My work is focusing on typological documentation of particular parts of the production process starting with coal and ending with shaped steel. One may consider this as an adventurous and highly profitable job. Nevertheless the truth might be surprising.

This non-profit documentation meant to show the fascination, beauty and long tradition of the world iron and steel industry and the process of steel making. Right, non-profit documentation. I have never been paid by a steel mill during past the 10 years and I am covering all my travel expenses by myself only. The companies are not hiring me, I am just begging them to let me in over and over. Getting a permission can take from one month to several years. Some mills will never let you in.

In the past, I was hoping that some institutes focused on industrial heritage preservation will start to cooperate, but the steel industry is still too young and active to attract anyone´s attention. What we call industrial heritage is usually considered everything before the second world war. Post-war mines and huge metallurgical combines are still viewed as something without the right historical value. Many times I have even encountered an opinion that a modern (post-war) blast furnace or a steel plant can´t be viewed as architecture for its purely purposeful design. The other problem is that recent industrial 'heritage' is viewed (at least in post-soviet countries) as the dark and dirty remains of our communist past and doesn´t deserve to be preserved. That might be right, but it won´t stop me for documenting these beautiful giants through my humble images.

The 20th century was forged by a steel industry which is almost gone now. Automation and new technological developments changed the industrial landscape, production processes and shapes that we once used to adore. One era is almost over. And I still believe that my images will help to understand how this ugly, dirty world of pipes and hard manual work used to be beautiful.

By now my archive of documented sites can be found under **www.viktormacha.com**. A book summing up my 10 years work on the field of heavy industries would be nice too, but impossible without sponsors.

**Contact the author**

# REPORT

## SPAIN

### THE COCHERAS DE CUATRO CAMINOS: ENDANGERED ORIGINS OF MADRID'S METRO

***Álvaro Bonet***

In 1904, engineers Miguel Otamendi and Antonio González Echarte traveled to the United States as part of the Spanish delegation to the Universal Exhibition in Saint Louis. On the way they passed through New York where they attended the inauguration of the new subway. The idea for a suburban railway for Madrid was born.

That same year, with the engineer Carlos Mendoza they founded the Mengemor company, with which they proposed to start work on the process of national electrification, reasoning that if they wanted such a modern project as an underground railway, a stable energy supply was needed. So, work began in 1905 on the Manzanares el Real reservoir for Hydraulica de Santillana. Shortly after, in 1913, the Mengíbar hydroelectric dam in Jaén became the first in Spain with movable sluice gates. Inaugurated in 1916, it counted on the design of Antonio Palacios who from that moment began his collaboration as official architect of the future metro company.

In 1914 they presented the metro project, finally obtaining the concession from the Ministry of Development in September 1916. In a few months they developed the executive project and work started on the first line at the Puerta del Sol on April 23, 1917.

The line ran north a little over two miles to the Cuatro Caminos neighborhood - peripheral at that time - where the workshops and garages of the company were set up. From there the inaugural train would leave on 17 October, 1919.

With an uninterrupted century of the city's history, the Cocheras de Cuatro Caminos represents the original nucleus of a collective transport system that changed the way of moving and understanding the city, weaving new urban relationships.

The building is unique, first because it has preserved - almost miraculously - to this day its original function, though now in a consolidated urban environment; and secondly because it is a very singular construction of its kind, given that it has a sawtooth roof, normal in factories but not in workshops and warehouses of European metropolises.

The ensemble is located at the level of the underground network, but emerges on to the street, belonging both to the underground world and to the urban one. The space was conceived around an open theatre of rails like a set design, with two contrasting facades: that of the light and diaphanous metallic shops with north-light skylights, in front of a perimeter with the monumental mouth of the entrance tunnel to the line.

This play of the wall against space, solid against light, is part of the expressiveness sought by Antonio Palacios to reflect the idea of modernity that the arrival of the metro in Madrid represented. From the outside, the Cuatro Caminos garages appeared as a visible element to the public from a parapet along the main avenue, now hidden by an unfortunate back wall that for decades converted it into an invisible heritage.

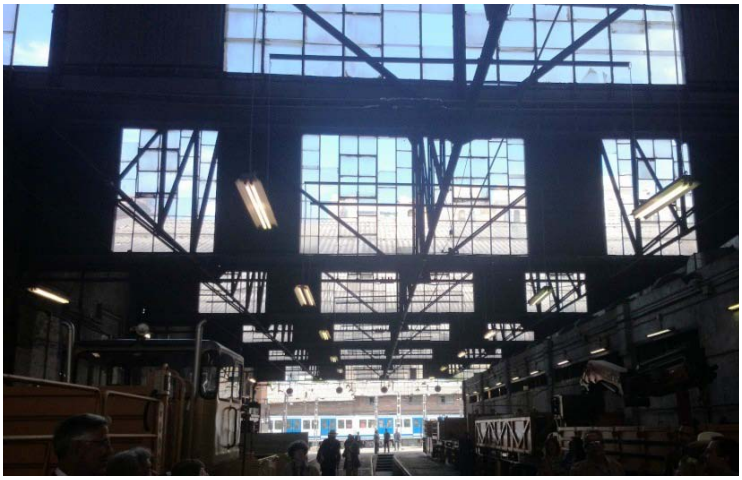
And this is the main challenge that we propose overcoming, that of invisibility. The absence in the citizen's memory of an asset, hidden from sight, brings us to the present. This lack of awareness has put the building at risk of disappearing under an urban reordering operation. It is not an isolated episode, and the industrial heritage usually has to face the incomprehension of a part of the citizenship, who don't understand the importance of the values of industrial sites for understanding our culture. To the place as the memory of work is added the representative capacity, the advance of science and technology, that sites like the Cocheras de Cuatro Caminos symbolize.

It is the only part of the metro that can carry its history from its beginnings, seen with our eyes or those of a century hence. There will be other remains that tell us about the company's past, but none like this 'maternal womb' where the first cars were assembled, where they slept every night at the end of their service, where they were repaired, painted, maintained...

If we are unable to stop the gratuitous destruction of these cultural assets, we will be deprived of our origins, and generations of the future will not understand how the technological leap occurred. Our governments must react: they not only have the responsibility, but also the capacity to take action. To save the Cocheras de Cuatro Caminos garage - whatever its present and future use - is a moral obligation and citizens we have to insist on it.

The monumental arched entrance to the underground line around 1920. Photo: Author's collection

An aerial view over the Cocheras garage in 1965. The sawtooth roof follows the New York subway garages the engineers knew from visiting America. © AHM



Inside the Cocheras in 2016.

# U.K.

## EARLY RAILWAYS RESEARCH

***David Gwyn and Neil Cossons***

Many readers would probably trace the origins of railways to the Stockton & Darlington line in 1825 and the Liverpool & Manchester in 1830. Perhaps they might also recall engravings that showed earlier and more primitive systems – a horse and a single wooden vehicle loaded high with coal on its way to the river Tyne, symbolising the formative stages of the Industrial Revolution.

A commission from Historic England, the United Kingdom Government's principal adviser on the historic environment of England, has given us the opportunity to bring to wider attention the antiquity, the extent and variety of this resource, and above all its significance. It asked for advice on current research, to identify sites of possible national significance and to suggest a future heritage strategy for pre-1830 railways.

The modern railway, as we know it now and as it operates all over the world, is in essence an English development, but it grew from a root transplanted from continental Europe in the 1560s. German-speaking technicians installed what was for them a commonplace and accepted technology in a copper-mine near Keswick, in north-west England. But it was in the context of the English coal industry that railways flourished, as overland systems running to canal, river or tidewater wharves. Until the end of the 18th century the rails were invariably of wood, and until the early 19th century the motive power was a horse, or a human, or gravity, but they were undoubtedly railways within the meaning of the word. There were many hundreds of miles of them in England before George Stephenson's Locomotion No 1 pulled the inaugural train on the Stockton & Darlington line in 1825.

Knowledge and understanding of these systems has been greatly augmented through the work of the **Early Railways Conference** ('pre-1830 in conception if not necessarily in date') held every four years since 1996. These have attracted researchers from a wide variety of backgrounds and many different countries, and the published proceedings have proved extremely popular. However, our commission also led us to conclude that there is still much work to be done identifying sites and routes. Archaeological discoveries have told us much about railways from about 1750 onwards, a period when documentary sources also start to become more abundant, but we know very little about the previous century and a half. Rolling stock and locomotives survive from the early 19th century, but would benefit from further archaeological study on the lines of the ground breaking survey-report on Stephenson's Rocket published by the National Railway Museum in 2000.

The earliest railways made use of wooden rails, but a few systems used stone before iron became near-universal in the first decades of the 19th century. This is the Haytor system in Devon, built in 1820. © Neil Cossons

The story of early railways has enormous potential to engage local communities and to strengthen economic regeneration. Because they were the essential arteries of the first industrial revolution, they are often located in places that have suffered social exclusion, but they can contribute very effectively to 'pride of place' and to healthy living through the creation of walking and biking trails. Not only do early railways tell the story of Industrial England but they also help us understand England's place in the modern world, as other parts of the world quickly adopted and adapted them – so another task must be to come to grips with how this happened.

Remarkably, there is still no authoritative overall study of the formative years of the iron railway – say 1760 to 1834 – to compliment, and follow on from, Dr Michael Lewis' ground breaking *Early Wooden Railways,* published by Routledge in 1970. As a consequence, we still do not fully understand how what was in effect a horse-operated mineral handling system comprised almost entirely of organic materials could have evolved within a human life-span into an iron-based tech-

The early railway evolved into the main line railway as we know it today. The architectural ambition of the Liverpool & Manchester is evident in Isaac Shaw's depiction of its opening day © Yale Center for British Art.

nology using mechanical haulage – one that had furthermore become the default option for long-distance and inter-city travel, despite the major investment in turnpikes and canals that had also gone on in the meantime. An important conclusion is that such a study should be undertaken, and that it would need to consider the global spread of the railway, since this was also the period in which they first appear in America and in Australia, and in which locomotive-operated systems become established in France, Belgium and Prussia.

Fortunately, there is a growing international body of enthusiastic historians, both lay and professional, who could make these aspirations a reality, either by carrying out further research or by providing encouragement and expertise to local history projects. All credit to Historic England for recognising this gap in knowledge, and our personal thanks to them for asking us to fill it.

The study can be downloaded from the **Historic England** web site.


The track-side view of the Bozen railway freight shed, long enough to unload a whole train. © Jaist

# ITALY

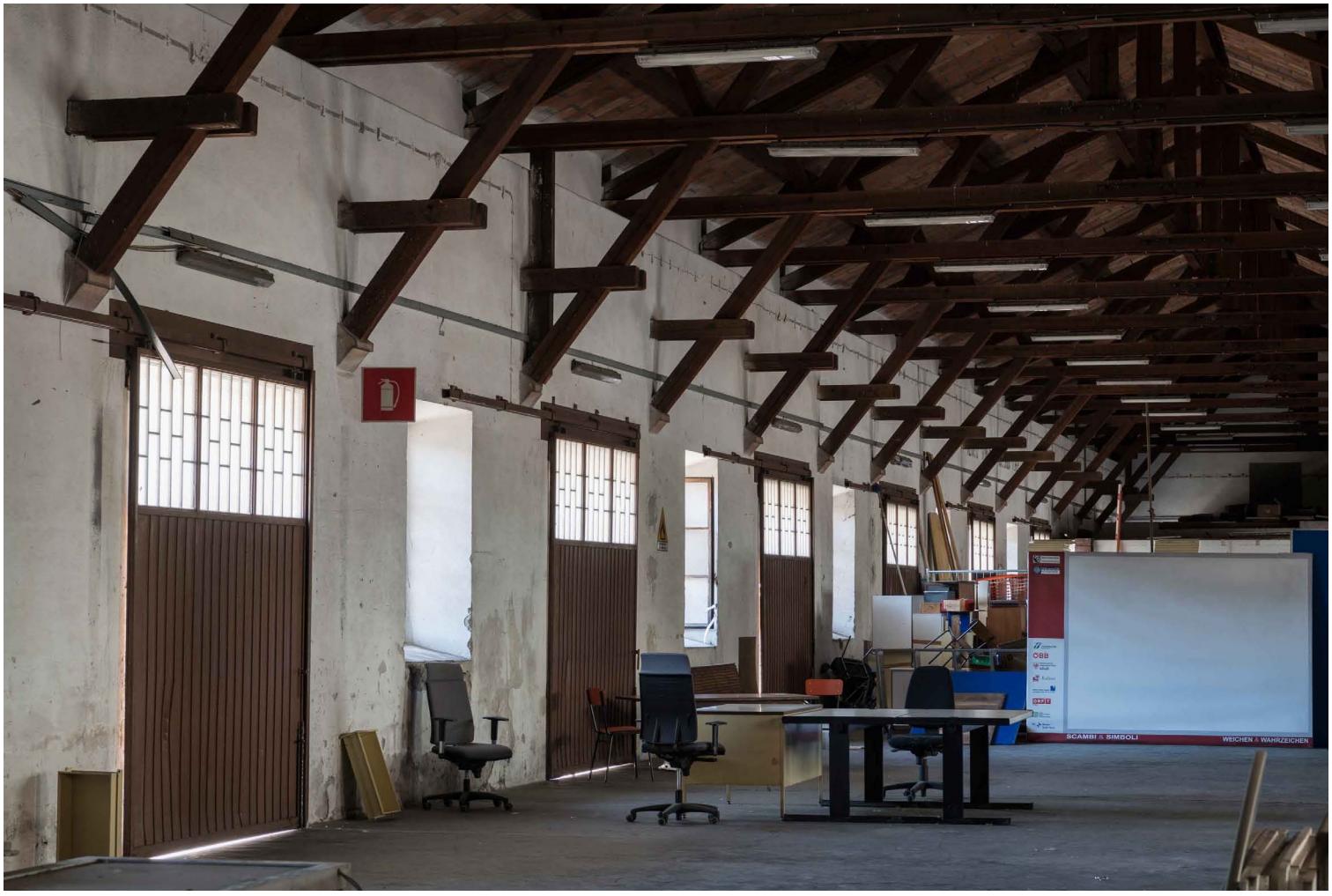
## AT RISK: THE NEGRELLI-HALL RAILWAY FREIGHT SHED

***Berthold Burckhardt, ICOMOS Germany; Massimo Preite, TICCIH Italy; and Günter Dinhobl, TICCIH Austria***

The impressive rail freight shed in the railway station of Bozen, South Tyrol, is threatened by a temporary bus stop. The goods store was built in 1859 when the Verona-Bozen line was opened, and the continuing section across the Alps at the Brenner Pass from Bozen to Innsbruck had still not been commissioned for construction. For this reason, goods on the north-south traffic from Italy to Germany (and vice versa) had to be reloaded from rail to road, and back again to rail in Innsbruck. Today, these rail lines are sections of the Scandinavian-Mediterranean Transport Corridor of the European Union, which is stated as a 'crucial north-south axis for the European economy' (European Commission).

The chief engineer of the Verona-Bozen line was Alois von Negrelli Ritter von Moldelbe (1799 – 1858); during his life he was involved in road and railway buildings in today's Switzerland, Austria, Italy, Czech Republic and Germany, but also for hydraulic engineering in Austria, Italy and Egypt (Suez canal). That is why it is locally named the Negrelli-hall.

The freight shed building is situated along a secondary track of Bozen railway station. It is around 170 m long and 12 m wide, and quite simple in structure and building technique, which is typical for that railway period. It consists of an administration building with two floors, a short freight shed on one side and the long one on the other side of the administration building. This underlines its function, for reloading of all the wagons of a freight train at the same time. The walls are built of stone and partly plastered. The roof consists of a simple and functional construction which is extraordinary for that size: the




Inside the empty railway freight shed. © Jaist

wooden roof framework inside the building does not need any pillars or cross walls inside the storage space. In addition, the support for the roof framework is split. This enables an overhanging outside porch for protecting the loading platform on both sides of the shed. The roof is made of traditional tiles.

Nowadays this building is in danger: it shall be destroyed to make space for a temporary (!) bus station. But the Kuratorium für technische Kulturgüter (board of trustees for cultural assets) with the president Wittfrida Mitterer is campaigning for the preservation of this building. Up to now there are several suggestions for re-use, developed by architecture students at the University of Innsbruck. Moreover, the Swiss traffic planner Willi Hüsler claims it is feasible to use the hall as a temporary bus station, and to keep it for a later re-use. On the other hand, according to local news, the provincial administration insists on demolition, while the deputy mayor of Bozen supports its preservation. Up to now, the campaign of the board gathers together considerable public support. Information on the campaign can be found in Italian and German.

It is of great interest to preserve the Bozen railway freight shed as the last example of the early period before the Alps had been conquered by the railway - except at the Semmering at the eastern end of the mountains - and reloading from rail to road was obligatory. The extraordinary size of this building illustrates the importance of European freight transport from north to south and vice versa in the mid 19th century. Demolition of the Bozen Railway freight shed will be a great loss of an unique monument of European Transport history!

**Contact the author**

The Solvent Belge warehouse, now used for the textile collection reserve.

# BELGIUM

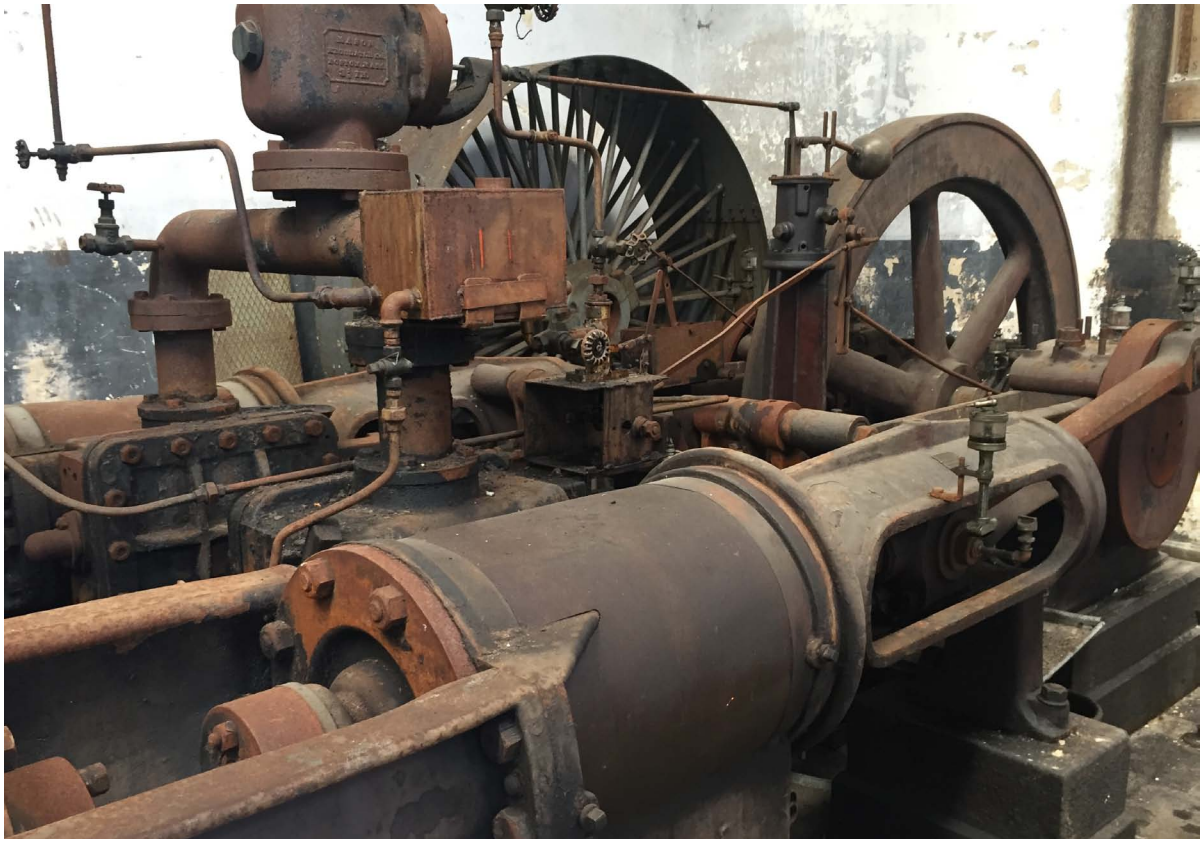
## THE 'SOLVENT BELGE' FACTORY COLLECTION

***Freddy Joris***

Behind one of the impressive buildings of the Solvent Belge company in Verviers, the decorated, eclectic style brick power hall conserves all its original late 19th century industrial equipment. This unique ensemble, mainly in working condition, is composed of the solvent machinery and five horizontal steam engines, formerly used for the operation of ventilators and pumps. This integrally conserved equipment, no longer used for industrial purposes, is still operational for demonstrations, thanks to the permanent efforts of Léon Sagehomme, main protector of the site and vice-president of the Scientific Committee for the history of Verviers.

The machine hall equipment for the dissolving process for the different types of wool was imported from the United States. Operation started by Solvent Belge in 1899. Steam power was the main energy source for the different tools. The engines activated ventilation equipment, air compressors, gas compressors, vacuum pumps and air pumps.

A large warehouse and former workshops on site conserve an important collection of wool carding, spinning, weaving and dying machines and tools. This collection, owned by the Municipal Museums of Verviers, can be visited on demand. An early mule-jenny and an impressive ensemble of historic carding engines are some of the excep-



One of the horizontal steam engines in the power hall.

tional artifacts. The final destination and presentation of this remarkable collection, well maintained by volunteers and former technicians of the wool industry, will be decided in the coming years.

**Origins of the textile machinery reserve**

In 2002, members of the Scientific Committee of the History of Verviers worried concerning the danger of loss and destruction of the outstanding textile machinery collection of ITEX (Institut supérieur industrie textile). This well-known institute had to close. The risks of neglect and vandalism were stopped by the action of the Scientific Committee supported by the mayor Desama, and an inventory of the collection was made. It was originally assembled for the creation of a future Wool Museum of Verviers, never realised due to budget restrictions and reduced to a Visitor's centre of Wool and Fashion.

The collection of historical tools and machinery was at that time scattered over four sites. In 2002 an agreement was reached between the municipality and Solvent Belge. The company was disposed to let storehouses for the whole collection, open for visitors accompanied by a guide. The machines were moved to Solvent Belge during the summer of 2003, an expensive and exhausting venture.

One year after the removal, Jean Knott suggested inviting former textile workers and employees to visit the depot-collections. The goal was to attract volunteers helping with the assembling process and restoration ('by heart'!) of the key-objects. The first open-door-day (in 2004) was a memorable success. In the first months of 2005, a team of volunteers started to assemble and restore important items of the collection. In 2006 an excursion to the Textile Museum in Euskirchen, Germany, strengthened the drive of the volunteer group, some volunteers even spent part of the holiday period in Euskirchen. In 2007, a Télétourisme television report by Guy Lemaire was seen by about 150.000 people. Also in 2007, Valérie Dejardin described the textile heritage and machinery collection of Verviers in her successful book La route du patrimoine industriel en Wallonie.

Open doors to visitors were held in October 2004, April 2009, June 2001 and May 2016 and were very successful and the collection is now accessible for groups on demand. For group visits, contact the **Municipal Museums of Verviers**.

Recently, in 2017, the Municipality of Verviers and the Walloon Region decided to purchase together the historical parts of Solvent Belge. This confirms the conservation on site of the Solvent Belge solvent machinery and other equipment but also of the textile machinery collections.

*First published in* La Lettre du Patrimoine n° 43 *(2016). Translation by Patrick Viaene*

The vessel at sea in the 1960s.

## U.S.A.

### THE M/S *CAROLINIAN*: THE FIRST WELDED COMMERCIAL VESSEL

***Zachary Liollio***

Welding has had a profound impact: from the cars we drive, to the ships that traverse the seas, the fusing of metals using heat has advanced astronomically in the last century. Arguably, the greatest impact welding had was the construction of cost-effective, lighter, and larger ships. Electric arc welding has been around in commercial and industrial settings since the 19th century. The wartime shipbuilding boom of World War I lead American and British shipbuilders to explore the advantages of electric welding in depth. The United Kingdom unveiled the first all-welded hull in 1920, the tanker Fullagar. This initial experiment was a success, but the first truly electrically welded ship (superstructure et al) would not come for another decade. The scenic city of Charleston, South Carolina, would be the setting of this second shipbuilding breakthrough.

The Carolinian was designed by naval architect Richard F. Smith, to be operated by Texaco as a 226-ton coastwise tanker. This ship utilized the revolutionary Lock Notch Welded System, which saved one-quarter of the cost and eliminated 85,000 lbs of rivets (and used 8,000 lbs of welding wire). Her keel was laid in the summer of 1929 at Charleston Dry Dock & Machine Company, situated on the eastern side of Charleston. Amazingly, the lock notch design required only nine workmen to build the hull. Charleston Dry Dock & Machine was the sole licensee of this design, and it was featured in Marine Review, Popular Science, and other contemporary periodicals.

Propulsion consisted of a Fairbanks-Morse 6-cylinder diesel engine geared to a single screw. The Carolinian produced 180 shaft horsepower at 400 rpm. During her shakedown cruise in March of 1930, the ship made 11½ knots steaming from Charleston Harbor, past the Fort Sumter light, and out into the Atlantic.

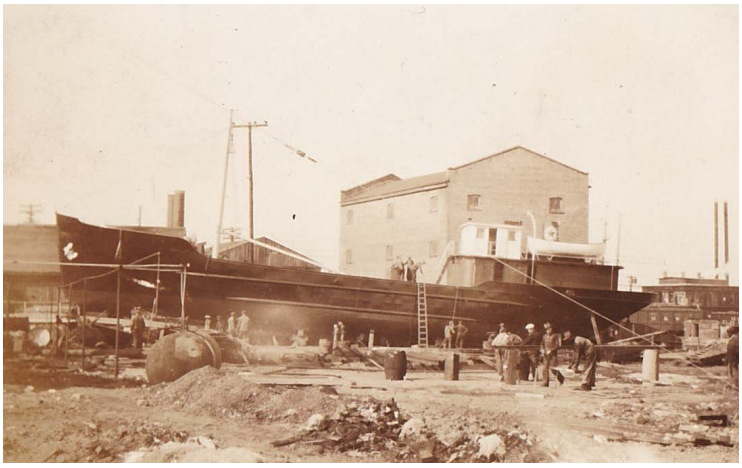
The tanker plied the waters between Charleston and her new homeport of Elizabeth City, North Carolina. The success of this prototype lead to 'an estimate for six orders of similar ships in 1931'. The standard of welded hulls and internal combustion engines would become

universal in construction of new vessels. Welding technology today continues to advance, perpetuated by the same features touted by Smith: lighter weight, reduced costs, and greater durability.

The legacy of Smith's venerable ship took an interesting turn thanks to the unforgiving Atlantic weather. On March 9th, 1934, the Carolinian was involved with a dramatic rescue in Albemarle Sound along the North Carolina coast. Four fishermen were plucked from a squall after the engine malfunctioned in their Shad Boat. These small wooden craft were typical along the Southern coast, and provide little protection. Captain E. R. Outlaw was in command of the rescuing tanker.

Unfortunately, as celebrated as the Carolinian was at the time of her launch, there is very little information on her fate. Two color photos, which appear to be from the late 1960's or early70's, would point to a long fruitful career of at least 30 years and one world war. With no casualty record found as of the date of this article, it is assumed that the ship was eventually broken up for scrap. If readers have any further information, please feel free to **contact the author**. As Charleston, South Carolina, continues to become an international tourist attraction and manufacturing center, it is important to recognize the contribution of the Carolinian to engineering, welding technology, and shipbuilding. This critical link to our technological past shows that Charleston has long been important to transportation and industry, and will continue to innovate in the 21st century. One can only hope that there will be an effort put forth to interpret this history to the public.

The site of Charleston Dry Dock & Machine Company (later Charleston Shipbuilding & Drydock co.) was redeveloped as part of the South Carolina Aquarium in the late '90s. Severe contamination delayed the project and lead to costly delays. Two surviving U.S. Coast Guard lightships, Frying Pan (LV-115) and Chesapeake (LV-116), part of the Charleston Dry Dock & Machine legacy, serve as museum ships in New York City and Baltimore, and help to interpret the rich maritime and shipbuilding history of Charleston, South Carolina. One day, they will hopefully be joined by the Carolinian.



In its dry dock during construction in 1929.



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**TICCIH** 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.ticcih.org

The **TICCIH 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 TICCIH Bulletin is published online to members four times a year.

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The home of the museum is the old Piccardo paper mill, built in 1756 and closed in 1985.

# ITALY

## THE MELE PAPER MUSEUM

***Alessandra Brignola***

After the brief news published in TICCIH Bulletin #69 about **inGE**, the new association devoted to the industrial heritage and culture of Genoa, we are happy to write about one member: the Paper Museum of Mele, in Voltri. As well as its restoration and new use of old machinery, we would like to share with TICCIH members the museum's history as one of the best practice of the industrial heritage of Genova, Italy.

The Mele's paper production was once a leader among European manufactures. Around the 15th century, the Genoese paper manufactory was born in the valley of river Leira, fostered by the presence of streams providing energy to big water wheels. Throughout the 16th century, the Genoese areas of Voltri and Mele - washed by the Leira river - became renowned. Their paper made the Republic of Genoa famous in Europe for its peculiarities: it was scarcely attacked by insects and it was consequently considered precious by the chancelleries of the royal houses of Spain, Portugal and England.

Merchants at the end of the 16th century wrote In Europa *altra carta non s'adopra che quella de' Genovesi* (literally: no other paper is used in Europe other than the Genoese). This statement reflects the splendor that Genoese paper manufactory reached between the 16th and 18th centuries, a period when the Republic of Genova, called La Superba, became one of the main paper production centres in Europe.

In the 18th century, the Mele area could count a hundred of paper mills. It was the time when paper was still hand crafted, sheet by sheet, with textile fibers such as hemp and flax. But the advent of the Industrial Revolution and the steam engine marked the beginning of the decadence for the paper industry in the area. On the one hand, paper mills could be built in new and more accessible sites, on other hand, the new technology and transportation were not suited to the Mele and Voltri's narrow valleys. Additionally, the invention of the continuous paper machine in 1789, as well as the introduction of cellulose obtained from tree bark, progressively marked the end of the production of the superior quality paper made with textile fiber.

The Paper craftsman class aimed to promote and renew the awareness of handmade paper production, now close to extinction, as part of the local culture and heritage.

After World War II, there were only 43 Genoese paper mills, and they, too, disappeared in a few decades.

**Paper Museum of Mele Project**

The Paper Museum opened in 1997 as 'evidence of the ancient knowledge of paper art, which has had such an importance for the economic and the cultural development of the territory of Mele'.

In 1992, the Municipality of Mele undertook the restoration of the mill using its own funds, together with those of the EEC, the Province of Genova, and the European Fund for Regional Development 2007-2013. The latter helped provide new facilities, furnishings and machinery to make the museum more functional and interactive. The old mill and the museum visit offer the chance to trace the technological path from plant fibers and waste paper to new paper, as well as to tell the ancient tale of the men and the women who worked there by hand.

In October 2013, the museum organized a professional class called Paper craftsman funded by the Liguria Region to promote arts and crafts as an economically sustainable production model. It developed the idea of an innovative enterprise based on ancient technology by enhancing the richness of the paper production process.

Ten young paper artisans were trained to produce fine paper artifacts for different uses, such as invitations, diplomas, or artistic productions. At the end of the course, the machinery has also be purchased with European funding.

Since then, Dr. Giuseppe Traverso, who participated to the course, took care of the management of the museum and is personally producing and selling the fine paper made by hand in the museum, using original machinery and ancient techniques. A vanishing craftsmanship that supported the local economy for over 500 years now marks its return, paying homage to a territory that has changed but it is eager to hand down its historic excellence.

Today, the inGE organizes with the museum and a local guide a tour combining the museum visit with a walk in the woods where traces of old mills, transport and technologies still lie, and a visit to some of the few modern paper factories which still operate in the area.

Information: **info@inge-cultura.org**

# AUSTRALIA

## REMOTE SENSING TECHNIQUES FOR INDUSTRIAL ARCHAEOLOGISTS

***Dr Iain Stuart, JCIS Consultants***

This is an introductory series on what used to be called principals of remote sensing but is now called Earth Observation, produced by the **Cooperative Research Centre for Spatial Information** (CRCSI). Earth Observation: Data, Processing and Applications series is an Australian Earth Observation (EO) community undertaking to describe EO data, processing and applications in an Australian context, and includes a wide range of local case studies to demonstrate increasing usage of EO data.

Remote sensing techniques have an obvious use in all areas of archaeology, and archaeologists are often consumers of such data without necessarily being clear on the way such data is collected and the limitations of the technology as well as what other techniques and data might also be available.

But what has this got to do with Industrial Heritage? Clearly some of the large scale earth observation techniques can help research onto the extent and impact of industry. For example, there has been an on-going study by La Trobe University in Victoria on the impacts of mining, and in particular hydraulic sluicing in depositing sediment downstream in the form of deposits of sludges and slimes over a large area which created a new landscape. Mapping the extent of these deposits would use earth observation techniques.

At a smaller scale, the tests cover aerial imaging, so obviously useful

**REMOTE SENSING, Cont'd pg. 20**

The Podolí treatment plant in Prague reflects the importance of water infrastructure for early 20th century urbanites. © PVK

# INTERNATIONAL

## HERITAGE CRITERIA FOR THE GLOBAL WATER INDUSTRY

***James Douet***

The latest of TICCIH's comparative thematic studies to establish the criteria for historic industrial sites with outstanding universal value is examining the heritage of the water industry. A consultation document is in preparation which will be discussed at a conference in Barcelona in the spring of 2018, before being presented to ICOMOS.

The tricky question of scope is largely resolved by a paper for ICOMOS by Michel Cotte in 2015, *Cultural Heritages of Water*. He proposed a typology which distinguishes sites for 'the acquisition, management and control of water to make it available for purposes of human use', and which is the focus for the TICCIH study. This presents us with an interlinked group of structures for collection and storage (dams, boreholes, reservoirs...), distribution (aqueducts, mains, pumping stations, water towers...), and treatment (filtering and waste). Many may have additional roles in, for instance, flood control, irrigation, transport, hydroelectricity or recreation, but the study is only concerned for their role in water supply. (The TICCIH canals study was published in 1996; hydropower is in under consideration).

Some properties may stand alone as exceptional for the technical merit of their construction, although currently only aqueducts (Padre Tembleque, Segovia, Tarragona and Pont du Gard) are included in the UNESCO list. But most historic structures will be integral parts of a water system, potentially stretching from dams, reservoirs and upland landscapes through urban distribution networks to waste treatment. Pioneering or complete examples may be outstanding.

The working thesis of the report is that the water industry has universal human value for its contribution to the 'sanitary crisis' which threatened the viability of large urban centres during the 19th century. At the start of this period, industrialization and the associated population growth made urban living conditions far worse or even

**WATER INDUSTRY, Cont'd pg. 20**

# MUSEUMS OF INDUSTRY

The Upper Yard at the Museum of Science and Industry, Manchester. © MSI

## THE MUSEUM OF SCIENCE AND INDUSTRY IN MANCHESTER

*The Museum of Science and Industry in Manchester, England, celebrates the special position of its home city in the global narrative of the Industrial Revolution, but has been equally concerned for the city's present and future. Sally Macdonald has been director of the museum since 2014.*

The **Museum of Science and Industry** (MSI) was established in 1969 as the North Western Museum of Science and Industry. The museum always had a mission that was both backward and forward looking. The industries – including cotton textiles – that had been so crucial to the economy of Manchester and the North West of England were of course fundamental. But the founders were explicit that one of its main purposes was to excite young people with science and technology, and to encourage them to consider careers in those areas. So it was also very much about regeneration and future prosperity. (c)

We have the same balance today. We tell the big stories about our city and our site, but our mission is 'Inspiring Futures'. That includes giving young people a sense of the opportunities that exist to take up STEM (Science, Technology, Engineering, Maths) careers, as well as helping people to be confident talking and thinking about the science that affects our lives.

**Sally MacDonald ©MSI**

The MSI was an independent museum with its own Board until 2012. Since then we have been part of the Science Museum Group (SMG), a family of five very different, but complementary, institutions: the Science Museum in London, the National Railway Museum in York, Locomotion in County Durham, and the National Science and Media Museum

When the Graphene exhibition leaves Manchester it will be travelling to Hong Kong and mainland China before returning to the UK. © MSI

in Bradford. There are all sorts of advantages to being part of this group. At one level they are very practical. We share all of our 'back of house' activity – human resources, ICT, finance – which makes us more efficient. We can also draw on a great depth of expertise and contacts, such as really excellent audience evaluation and visitor insight teams whose research is absolutely crucial in helping us understand our audiences and plan programmes.

But I think the most important benefit is ambition. Our focus used to be on local stories and local audiences, but we now think of ourselves in a national and international context. Without losing those regional roots, we can tell a bigger story. Our current exhibition, for example, is about graphene, the incredible new two-dimensional material that was isolated by an international team of researchers working at the University of Manchester, and which is now being developed by companies all over the world. This is an international story with local roots.

Our collecting is very much driven by the stories we want to tell in our galleries and programmes. There are still some gaps in terms of Manchester's industrial history that we seek to fill. But our focus will be on collecting the recent past, and ensuring that we are recording the science and industry of Manchester today, such as the huge growth in the digital and creative industries that is taking place.

Joining the Science Museum Group meant we are a part of one **very large collection**, and we need to co-ordinate our acquisitions. We can plan for better storage facilities and major digitisation programmes to help us make our collections more accessible, a priority at the moment. Plus we are very much committed to active collections management – to disposal as well as acquisition. If we have objects in store that duplicate material elsewhere in the Group, or which we could never display, we will look for other museums or organisations that can make better use of them.

All our exhibitions are designed with our audiences as the starting point. The visitor survey analysis I mentioned provides us with very detailed information about our audiences, who they are and what they want. Before embarking on any exhibition or gallery project we need to be really clear about which audiences it is aimed at and how it meets our objectives. We work with colleagues across the group to brainstorm ideas for exhibitions and consider suggestions from

people outside. Many ideas get sifted and rejected. Wherever possible we draw on the Group's collection, but we borrow from other lenders. And sometimes a contemporary science exhibition is a great opportunity to collect in a new area.

We have our own curators and exhibition teams but always use external designers and contractors to create each show. Once an idea is taken forward, we work with colleagues across the Group to make sure that the exhibition will work for other audiences as well as in Manchester, and that the exhibition has potential to tour internationally. That's very important for us, both for the profile of the museum and also for generating income.

Finally, and very importantly, we also evaluate our exhibition ideas at a formative stage and once they are open. We made some small changes to our latest exhibition, to make it clearer and to encourage longer stays, as a result of audience evaluation. That's really important, especially if an exhibition is touring, because there is always something you can improve once you see how the public respond.

I think there is a tremendous future for museums like ours. For me, there is something very special about inhabiting an iconic historic site and yet raising questions about contemporary science and its role in our lives. In the north west of England there is a skills shortage in some key industries so we have a big role, working with schools, universities and businesses, to help enthuse young people and their families with the opportunities on their doorsteps. We can't predict or prescribe what our visitors will gain from coming to see us, but it's our job to inspire people with the possibilities.

## REMOTE SENSING, CONTINUED

in mapping and recording industrial sites. Different platforms are discussed as well as different mapping technologies such as LIDAR, all of which had been used to identify and record industrial sites.

Having gone through courses and text books on remote sensing back when Landsat was a lad, the Australian content, mostly illustrations of various techniques, is most welcome. Deserts not glaciers and in colour too!

This series aims to consolidate EO teaching resources in Australia and encourage a greater number of tertiary courses involving EO in Australia. There will be three volumes:

Volumes 1A: Data-Basics and Acquisition and Volume 1B Data-Image Interpretation are available on-line for free **download**. Volume 1A introduces the scientific foundations of EO and describes the basics of data acquisition in terms of energy sources, platforms and sensors. Volume 1B details image characteristics, EMR interactions, and image interpretation and usage. Appendices collate relevant data sources and provide further information on photographic products and reflectance measurement.

Both of the volumes are a thorough introduction to the earth observation, profusely illustrated in colour and well written. They are highly recommended both as a self-paced learning tool or as reference books. They are at an attractive price point too.

## WATER INDUSTRY, CONTINUED

fatal, as cholera and other water-borne diseases ravaged ill-drained cities. The technical solutions did not yet exist, any more than the administrative, financial or medical capacity of urban administrators to resolve the situation.

But by the end of the century, numerous cities had retro-fitted complex infrastructure to supply potable water and to remove and cleanse sewage and some industrial waste, and the 'sanitary question' for them, as for new settlements, was largely answered. As the illustration shows, the design of this infrastructure often reflected the huge social value that it had for contemporaries. For example, in the 1860s Jules Verne imagined Paris a hundred years later dominated by spectacular waterworks. In fact, as steam engines were replaced by submersible electric pumps in the early 20th century, the infrastructure of water, dams apart, became in large part indiscernible.

At least in the English speaking world, urban historians and historians of public health have had more to say about water supplies and sewer systems than have historians of infrastructure, who have given little attention to sanitary technologies. Information on the historic experience of cities in Arabia, Latin America, Eastern Europe and Asia is therefore especially welcomed.

To comment on the consultation document **contact the author**.

## NETWORKS OF EUROPEAN INDUSTRIAL MUSEUMS

***Eusebi Casanelles***

Industrialization introduced a growing complexity in the world of work. Not only because of new technologies, but also through the multiple interrelations that companies established with other centers of production, finance and consumption through which they made transfers of raw materials, products, technology, capital and people. They created territorial networks of relations, constituting what Alfred Marshall defined in 1890 as 'industrial districts', providing competitive advantages to the centers involved. Many of them have defined industrial landscapes that are now being valued for their heritage.

This change in the scale of production and complexity is now reflected in the museology of production. Traditional territorial ethnological museums that valued autarchic economy centres, limited their intervention to a small, productive nucleus, often installed in the middle of a rural area. In contrast, the first industrial territorial museums were extended to much larger areas. The three best-known follow this pattern. The Ironbridge Gorge Museum (1967) extended through 12 km down the length of the English Severn Valley, conserving different sites that reflected the productive complexity of this area. In 1972, the Ecomusée de Le Creusot-Monceau-les-Mines, in Burgundy, France, was set up, composed of five physically separated sites. The third is the Ecomuseum Bergslagen, in Sweden, founded in 1986 and occupying an area 72 km long in which 60 sites have been preserved. Unlike the previous ones that involved different sectors, the Bergslagen museum dealt with the mining sector and the iron industry, a monoculture in that area.

In the last decades, several territories in Europe have advanced a step further, extending the concept of the museum-territory to a region. They have created territorial networks organized by industrial museums different from those in other fields of cultural heritage. Normally, museums networks are of two types. Some are collaborative associations without a defining leader, but with a common museum program, such as those of castles or historic houses, many of them created for tourism. Other museum networks have been promoted by public institutions, in general non-thematic networks, offering support related to conservation issues and museology. In contrast, the common thread of industrial heritage networks is that they want to give a thematic vision of the industrial history of the whole region or country, with a defined center having a degree of power of direction and a global brand that strengthens the image of each museum.

In April this year, the Museu de la Ciència i la Tècnica de Catalunya (mNACTEC) in Spain hosted a seminar on this topic in which different European museum networks participated. They were the Rheinisches Landesmuseum fur Industry (RIM), in Germany, which groups six industrial museums, and its neighbour the Westphalian Museum of Industry (WIM) in which there are eight sites; the Musées des techniques et Cultures Comtoises, which coordinates seventeen museums and industries open to the public; the Piraeus Bank Foundation, which has created a network with nine pre-industrial and industrial museums in different parts of Greece; and the industrial museums of Silesia Poland where there are two initiatives to create two networks of industrial museums. The Science Museum Group, in Britain, made up of five technical museum collections and an industrial one, also participated. Finally, the mNACTEC itself, which is a network of 27 museums in which each one deals with a different industrial sector and between all them, explains the industrial history of Catalunya. There are also two networks focused on tourism with a central body that oversees its operation, the Route du Ruhr, whose main trail is 400km long and links 25 main sites, 13 workers settlements, 17 panoramic points and 1000 secondary sites, is managed by a municipal association.  and the Holland Route, which has the same objective and coordinates 55 industrial sites.

Industrial heritage is a 'heritage of knowledge' in the sense that its greatest value is to be a historical document and a technological testimony to the impact of industry on its physical and social environment. In order to understand an industrial production centre, it's necessary to show the complexity of relationships in the territory, as well as the links that were established with foreign centres to create more knowledge. The most intelligible way is to create these territorial thematic networks. In addition, the managers of industrial heritage should increase the value of knowledge of a industrial heritage site, not only by explaining the 'industrial district' but also its relationships with other places outside the territory. And since the Symposium only dealt with European networks, I would like to add that for Europe, the explanation of business interrelations is crucial for this continent because with them the idea of Contemporary Europe began.

Students documenting the Hirschfelde power plant.

## INDUSTRIAL ARCHAEOLOGY AND INDUSTRIAL HERITAGE, UNIVERSITY OF TECHNOLOGY AND MINING ACADEMY

***Helmuth Albrecht***

*Editor's Note: During the next 18 months the* Bulletin *will present current teaching in industrial heritage and archaeology. In the first of this major review, Professor Helmuth Albrecht presents the courses he directs at the Institute for Industrial Archaeology, History of Science and Technology in Freiberg, Germany, which hosted the memorable TICCIH Congress in 2009.*

The **Institute for Industrial Archaeology, History of Science and Technology** (INAHIST) was founded in 1992. Since 2001, a diploma study program for industrial archaeology was first offered by the INAHIST which was changed in 2008 into a bachelor program for industrial archaeology and a master program for industrial heritage studies offering a Bachelor of Science and a Master of Science degree. A PhD program for industrial archaeology as well as for history of science and technology was established in 2009.

A special characteristic of the Freiberg study programs is their combination of theoretical and practical studies with research projects in the field of industrial archaeology and industrial heritage. These are mostly organized in close cooperation with partner institutions like heritage administration, museums, companies or municipalities. Each year students of all forms take part in industrial archaeology field studies for which the federal state of Saxony, with its long industrial history and its rich stock of industrial heritage, offers a perfect background. Field work and research of the INAHIST therefore cover the space of time from the Middle Ages until industrialization up to the second half of the 20th century in the technology and industry of mining, textile, engine building and electrical engineering, as well as in chemical, pharmaceutical, optical, tool building or automobile production. Scientific excursions, work experiences at partner institutions or an introduction into scientific writing and presentation are all part of both study programs.

In its six-semester course, the bachelor program for industrial archaeology offers a comprehensive introduction into the historical and industrial archaeological methods for the survey, documentation, evaluation and preservation of technical and industrial monuments. Teaching topics are, amongst others, the history of science, technology and economy, archival and field studies, archaeology, industrial architecture or modern electronic survey and documentation methods. For a better understanding of the functionality of historic machinery and production technology, elective courses in natural sciences and engineering technologies are offered.

The Masters program for industrial heritage studies with its four semester course is open for students with a bachelor degree from a broad variety of disciplines like industrial archaeology, history, architecture, archaeology, museology, heritage studies, cultural sciences or

engineering. It offers special courses in heritage law and administration, building law, industrial culture, museology as well as in the management of industrial heritage sites and landscapes. Master students participate in the research projects of the INAHIST.

The PhD programs for industrial archaeology and history of science and technology are part of the various research topics and projects of the INAHIST. The research projects are financed by various institutions like private, federal or state research foundations, municipalities, public authorities, state ministries, the European Union or companies. Their research topics cover a broad variety from the documentation, evaluation and preservation of single heritage sites up to whole industrial landscapes and the preparation of UNESCO World Heritage nominations. Current research projects of the INAHIST include the following: the documentation of textile mills in the river valleys of Saxony; archival studies for the state survey of minerals in Saxony; project partner in the Archaeomontan-Project (survey and documentation of medieval archaeological mining sites in the Ore Mountains); partner in the preparation of the Saxon industrial culture exhibition in 2020; lead-partner in the German-Czech European project for communication and capacity building in the World Heritage project Mining Region Ore Mountains; the Saxon Ministry of Interior project to establish a Saxon World Heritage information centre; nomination of the German-Czech mining region Ore Mountains for the World Heritage list; partner of the project of the German Mining Museum at Bochum about the decline of German coal industry after 1945; history of the Mining Academy Freiberg in the time of national socialism; the reflection of social, technological and cultural history of mining in the Freiberg area in historic photography; history of industry in rural areas.

The INAHIST cooperates with local, regional and national museums for the history of technology and industry, with the regional and national heritage administrations as well with international partners and institutions like several universities or organisations like ICOMOS and TICCIH. The XIV International TICCIH Congress of 2009 was organized by the INAHIST in Freiberg/Germany.

Further information: **Professor Dr. Helmuth Albrecht**

# U.K.

## UNDERSTANDING INDUSTRIAL ASSETS: CONSERVATION & MANAGEMENT

### UNIVERSITY OF LEICESTER
### 18 –19 SEPTEMBER, 2017

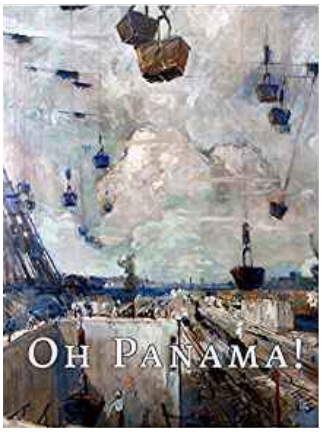
Since 2014 the Schools of History, and Archaeology & Ancient History at the University of Leicester have been working with Historic England to develop short Continuing Professional Development (CPD) courses for people working in the historic environment sector. The aim of the Heritage Practice Training Programme is to address key skills gaps and needs that have been identified across the sector.

One of the most popular courses on the programme is **Understanding Industrial Assets: Conservation & Management**. The course examines issues around the conservation and management of industrial heritage. It will provide an understanding of a selection of industrial (and post-industrial) buildings and sites, the assessment of their significance, their protection, and the management issues faced by these kinds of heritage assets.

This two-day course aims to develop understanding of industrial heritage assets and their conservation and management, and is directed by Wayne Cocroft, Senior Investigator at Historic England. Specialists from Historic England contribute sessions on case studies and the latest research and policy as it relates to the interpretation and protection of industrial heritage in England. Experts from other organisations also contribute to the course, and in previous years these have included Mike Nevell, Director of the Centre for Applied Archaeology at the University of Salford; John Minnis, formerly of Historic England and now an independent researcher on railway and road heritage; Ursilla Spence of Nottinghamshire County Council on the role of politics and perception in the management of industrial heritage; Shane Kelleher of Ironbridge Gorge Museum on partnership working; and Adam Tyson of the Heritage Lottery Fund on sustainable futures for industrial heritage.

Understanding Industrial Assets is aimed at local government historic environment staff, curators and consultants responsible for assessing the significance of industrial heritage and looking for solutions for sustainable long-term management. The course will also appeal to other professionals who are called to provide advice on the significance and management of historic industrial areas, as well as the managers and trustees of historic industrial sites. By the end of the course delegates will have gained a greater understanding of the range of industrial (and post-industrial) buildings and sites, and the management issues faced by these kinds of heritage assets.

# PUBLICATIONS RECEIVED




The Conquerors (Culebra Cut, Panama Canal) 1913 ©Wikipedia Commons

***Oh Panama! Jonas Lie Paints the Panama Canal,***

Kirsten M. Jensen and Bartholomew F. Bland. Yonkers, NY: Hudson River Museum and Doylestown, PA: James A. Michener Museum, 2016. 99 pages. 70 illustrations (65 in color).

$19.95 Paperback.

One of the greatest miracles of modern engineering is the Panama Canal, constructed between 1904, and 1914: it is the subject of a splendid exhibition catalogue, Oh Panama! Jonas Lie Paints the Panama Canal. Linking the Atlantic and Pacific oceans, completion of the canal was celebrated with the Panama-Pacific Exposition held in San Francisco in 1915. Printmaker Joseph Pennell, whose lithographs of the Canal had been published in 1912, regarded the achievement as a stunning "Wonder of Work."

Jonas Lie (1880-1940), a painter of the bustling urban landscape of New York City, had been struck by the "monumental bridges and towering buildings, all architectural dynamos" that he saw all around him in the vibrant metropolis. After viewing a color film on the canal's construction, he resolved to record the "drama and majesty" of this herculean project, and after visiting the site in 1913 as the gargantuan effort neared completion, he produced nearly thirty vigorously painted and strongly colored canvases (fourteen were in the show).

Three two-page sections followed by a colorful early map of Panama and the Canal Zone serve as a helpful prelude to the two long essays by co-authors Kirsten M. Jensen and Bartholomew F. Bland that thoroughly contextualize Lie's ambitious project within its historical moment. Briefly introduced are short accounts of Lie as an artist, the canal as a construction site, and the Isthmus as a tourist site. Lie, like many of his contemporaries, felt the activity in Panama represented "the drama of nature pitted against the force of modern construction." Earlier failed attempts to bridge the Isthmus dated to the early 1880s, but Panamanian independence and the establishment the Canal Zone by the United States, breathed new vision and vigor into the idea that the ambitious goals of the builders might finally be achieved. Not surprisingly the canal became a popular tourist site for visitors who wanted to view the engineering triumph they had heard so much about.

In Kirsten M. Jensen's essay, "The Drama of the Ditch: Jonas Lie's Cinematic Panama Canal," she demonstrates how the project represented a bold symbol of "American engineering and economic might," within an international framework of emerging globalism.

While Lie was not the first artist to engage the canal as subject matter, it was he who realized that large, bold paintings could convey the "drama and majesty" in a way not possible in the more intimate black and white medium of a print. Quickly securing financial backing, he headed to Panama, eager to capture "the drama of man against nature, and of nature resisting man's encroachments." The Culebra Cut, regarded as the most breathtaking section, inspired nearly a third of his paintings, and his panoramic views conveyed the sublime scale of the enterprise. Painters Alson Clark and William Prettyman were also working on site, but their smaller canvases and Impressionist style did not convey the sheer awesomeness of what was happening in Panama. Lie's ability to convey the emotional impact of the triumph of American conquering ingenuity references the strong patriotism undergirding its realization.

Twenty-eight of the paintings were shown at the prestigious Knoedler Gallery in New York to great acclaim in December 1913. While the series made his name, it did not secure Lie's fortune as only two paintings were sold. He had hoped that the continuing fame of the subject matter would lead to their acquisition by a leading American museum. But not until 1929 did private donation make possible for the acquisition of twelve of the paintings by the United States Military Academy at West Point.

Bartholomew F. Bland's essay, "Jonas Lie: A Visitor in a Tropical Landscape," deftly places his work with the broad history of American Art. America's engineering skill had transformed "the world's travel and trade" within an expanding global economy. Panama in the popular imagination was dually "an enchanted land of luxurious foliage" and "a seething cesspit of death." Lie captured "the steel and sinew" of construction in which exotic landscape intersected with American imperialism. His work transcends documentary reportage capturing "the poetry and strength" of the project by focusing on "the monumentality of the work, rather than the people working."

The energy of the authors' prose matches Lie's enthusiasm for the potential of his subject. Excellent color reproductions and historical images bring alive the excitement of an enterprise characterized by "jaw-dropping statistics," demonstrating how Lie skillfully conveyed the Progressive era's awe for "technological progress" on a global scale.

***— Betsy Fahlman, Arizona State University***

# PUBLICATIONS RECEIVED

### *Industrial Heritage Sites in Transformation – Clash of Discourses*

Heike Oevermann and Harald A. Mieg (eds.), New York: Routledge, 2015. 222 pages. 29 illustrations

$148.00 Hardcover
$38.47 eBook

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This book focuses on the handling of industrial heritage sites within the context of urban transformation. From this author's Berlin perspective, this is a new and a very much needed approach: it is about broadening the 'traditional' focus of industrial heritage experts on mining and steel-producing regions to metropolitan cities shaped by the processes of industrialization – or even born from them, such as Berlin which only emerged as a major European metropolis with the Second Industrial Revolution and especially with the new electric technologies that turned the city into the utopian model of 'Electropolis.' The second reason why I find it so important to extend the view beyond the raw-material-regions born from the First Industrial Revolution is that the context of growth in cities today is characteristically different from the deindustrialization processes we are used to associate industrial heritage work with.

The book is the final outcome of a research project carried out between 2011 and 2014 by the Georg Simmel Centre for Metropolitan Studies at Humboldt University Berlin with funding from the German Research Foundation DFG. In April 2012, they organized an English speaking two-day symposium titled 'Cities and Change and Challenge' in Pfefferberg, a former brewery in Prenzlauer Berg that has lately turned into one of the city's new creative hotspots. Not only in terms of content but also regarding the format, the symposium was innovative and inspiring: the case study lectures were grouped by pairs, and each pair was followed by a more theoretic comment adding perspectives from the meta-level. Lecturers came from a variety of disciplines and different European cities, and it was a lively and convincing mix of well-established as well as young speakers. The book, however, is more than the symposium's proceedings: lessons learned from three years of research have been incorporated, the case studies have been worked over, and new contributions have been included.

In order to prevent false expectations: it does not define what industrial heritage sites are, nor does it explain how former industrial sites turn into heritage over time and by whom. The editors' interest is to understand industrial heritage sites as battlefields for three different ways and logics to deal with them: conservation, urban development, and new architecture; and to point out how these three professional fields or academic disciplines –or 'discourses' as they define it–interact with one another. Chapter two tries to explain discourse analysis as a method derived from social sciences and to develop a methodological ground for the analysis of case studies and the complex juxtaposition of differing values, strategies, and goals. The book wants, therefore, to be more than a simple compilation of case studies, and the individual authors managed to conclude correspondingly.
The eleven case studies (chapters 3-13) are grouped in three thematic sessions. The first, Heritage and Planning Practice, provides case studies from Liverpool, Oslo, Milan/ Sesto San Giovanni, and Winterthur. The second, Agents and Processes of Transformation, groups examples from Kiev, St. Petersburg, and Berlin, while the contributions to the third, Shifts in Re-Using Heritage Sites, cover different case studies each in France, Germany, Hungary, the US, and India. The book's final chapter concludes with an imaginary discussion on Conservation and Planning – an innovative format again, presenting the main findings from three interviews done in three different places with, inter alia, Sir Neil Cossens and Birgitta Ringbeck.

There is too much interesting content in the book as to pack it all in one short review, so I only want to mention one: Berlin. Mackrodt and Kalandides analyse the schizophrenic gap between the striking physical and intangible evidence of the city's industrial past as 'Electropolis' and a city marketing focussing on people instead of places under the slogan beBerlin – even though most of the creative people Berlin wants to be associated with today are precisely those working on former industrial sites. From this example, valuable conclusions can be drawn for other cities that ignore or deny their industrial past because they fear negative connotations – such as Barcelona. New and intelligent ways of informed storytelling are needed here, and a reconceptualization of tourism as interpretation work. The **Berlin Centre of Industrial Heritage BZI**, created in late 2011, took on the challenge to fill this gap and within its first years of existence has developed a qualified touristic concept aiming at re-visualizing Berlin's industrial stories – an example which might also be inspiring for others.

***— Marion Steiner***

A longer version of this review has been published previously, in 2015, in the **Journal of Architectural Conservation.**

**Contact the author.** Dr. Steiner is Team leader for national and international industrial heritage networks at the Ruhr Regional Association *Regionalverband Ruhr.*

# PUBLICATIONS RECEIVED

### *Tsumeb Copper Mine, Namibia's Industrial Heritage*

Judith Fait. Publisher: Kuiseb / Namibiana. Judith Fait, 146 p. hardcover, 150 photographs (135 in color), historic maps and drawings.

Scheduled for print publication Sept. 2017
eBook available in July 2017

Although colonial copper mining has taken place in Africa since the end of the 19th century, very little is known about its industrial heritage. A very well conserved albeit neglected site is at Tsumeb, Namibia. The book reconstructs its development from historic photographs, maps and the material found in various archives worldwide.

Tsumeb is famous among mineralogists, and considered an extremely complex and diverse source for copper, lead, zinc, a few grams per ton of cadmium, silver and germanium plus manifold arsenic minerals. So far, 274 different mineral species have been identified. The most beautiful specimens are on display in internationally renowned collections. What was intended as a ten year mining venture lasted for 90 years, survived both world wars and economic depressions, and today it is Namibia's third largest town.

Material legacies are still existing from each stage of Tsumeb's development. A rare type of mining head gear, an independent power supply, processing and smeltery show economic, technological and societal changes in a continuous sequence. Thus the town is able to cover copper mining history, beginning with its pre-colonial emergence over a 100-year period of industrialization, right up to recent development, and ranging from simple opencast in 1900 until independence in 1990. The industrial buildings represent a symbol of early African industrialisation and have also triggered the development of a local architectural style, 'Tsumeb Historicism'.

Among the scientific work and sociological changes is the first practically useful method of ore microscopy, invented in 1914. In the 1960s, the Tsumeb smelter built the world's most modern processing plant for the complex ores based on the research of several European and American universities.

The transformation of migrant work into permanent settlement is the result of continuous industrial development. The cultural reshaping of traditional tribal lifestyles has - not always without dispute - initiated and formed a new selfconception and started a sustainable social and industrial development which ultimately opened up the country's path to modernity.

The book is thoroughly researched from historial literature and comes with an extensive reference. Thus it may well serve as a reliable starting point for future research, while lovers of coffee table books will like its design. All revenues will serve to research and preserve this unique industrial heritage.

***— Judith Fait***

**Contact the author.**


### *Industrial Heritage in the Eyes of Experts/Experience*

Nina Bartosova and Katarina Haberlandová, Bratislava: STU, 2017, Slovak and English.

From the late 19th century, Bratislava was an important industrial city within the Hapsburg Empire, and up until the 1990s a large number of its residents worked in one of the many industrial enterprises. It is this contrast between the historic importance of industry in the city, and the speed with which this still-recently present identity retreated along with its physical traces, that drove the authors to analyse the deeper links between society and its built heritage, or conversely what makes a society indifferent to it. 'Experts' and 'experience' in the title reveal the contrast between the professional/impersonal and the subjective/personal, by which they hope to express the wider predominantly social and anthropological essence of the importance of cultural heritage. Includes a survey of the principal historic industrial sites of Bratislava.

# COMING SOON

## INTERNATIONAL

### CONFERENCES AND CONGRESSES

## 2017

### BRAZIL

ICOHTEC 44th annual symposium, part of the 25th International Congress of the History of Science and Technology
23-29 July, Rio de Janeiro
www.icohtec.org

### DENMARK

ERIH Annual Conference: Industrial Tourism: Linking the past with the present and future
20-22 September, Copenhagen
www.erih.net

### U.S.A.

Our Inland Waterways: Agents of Transformation
World Canals Conference concerning the operation and maintenance of canal structures and vessels, community and economic development catalyzed by inland waterways, preservation and interpretation, and environmental issues.
Study tours will follow the Erie, Oswego, and Cayuga-Seneca canals.
24-28 September, Syracuse, New York
http://wcc2017syracuse.com

### SPAIN

XIX Jornadas Internacionales de Patrimonio Industrial. Criss-crossing heritage, urban landscapes, industrial production and contemporary culture. CfP until 20 July,
27 - 30 September, Gijón.
http://ncuna.es

### FRANCE

The industrial heritage in the UK, Mutations, Conversions and Representations.
10 October, 2017, University of Rennes 2, Rennes
https://indusheritage17.sciencesconf.org

### MEXICO

IV TICCIH Mexico International Conference. Agro-Industrial Heritage, Background, Challenges and Relevance
18-21 October, 2017, Mérida, Yucatán, México.
Further information: seminarioticcihmexico@gmail.com

### GERMANY

Nuclear Power Stations. Heritage Values and Preservation Perspectives,
20 -21 October, Deutsches Technikmuseum, Berlin.
Contact: t.dame@campus.tu-berlin.de
Call for Papers (PDF Download)

# COMING SOON

## U.S.A.

Society for the History of Technology (SHOT) Annual Meeting
26–29 October, Philadelphia, Pa.
www.historyoftechnology.org

## INDIA

ICOMOS 19th Triennial General Assembly and annual Advisory Committee, International Scientific Symposium on Heritage & Democracy (working title)
11-15 December, New Delhi
icomosga2017.org

## MOROCCO

ICOM-CIMUSET Conference: Technical heritage and Cultural Identity.
5-8 December, Rabat
www.cnrst.ma

## 2018

## CHILE

XVII TICCIH Congress, the first in Latin America.
9-12 September: visits
13-15 September: Congress, Universidad Central de Chile, Santiago.
16 September: Closure and visit to Sewell Copper mining town World Heritage Site