



NUMBER 86

4th Quarter, 2019

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The masonry blast furnace at the Ferrería de Pacho ironworks in Colombia. At the top of the 9 m pyramid was a terrace around the chimney and the charge door of the furnace. A bridge connecting it with iron ore, charcoal and chalk store. [See page 6.](#)

MEMBERSHIP NEWS

HELP OUR NEW MEMBERSHIP SYSTEM

Dr Miles Oglethorpe, TICCIH President

Welcome to the latest *TICCIH Bulletin*. Since the last issue, we have been continuing to prepare for the transfer of our membership system on to a new platform. This means that in the New Year 2020, when your subscription renewal is due, you will have the choice of opting into our network. We urge you to do so. This will provide you with access to information on colleagues and their associated expertise and interests across the world,

Correction: The Editor's apologies to Graça Filipe, whose name was not spelt correctly in her article in the last issue #85

MEMBERSHIP NEWS

and will allow you to contact and be contacted by fellow members. You will recall that new personal data protection legislation has meant that, to be compliant, we were no longer able to share members' personal information using our existing procedure. Our new system will allow us to do so in a way that is both legal and more effective, but only if members are happy for us to include their details. In other words, you will have to opt in: only TICCIIH members will have access to this information.

The second major change will be that we are amending our subscription system so that it works on the basis of affordability and will be easier to join and pay. The system will default to the standard \$30 annual rate, but members will have the opportunity to pay more or less, depending on their personal circumstances. We are especially keen to attract younger members, and hope the new student rates will help attract a fresh generation into the world of industrial heritage. But we also know many retired people have allowed their membership to lapse in recent years and we would love to draw them back in the TICCIIH community, and not to lose their energy and expertise.

As I mentioned in the last Bulletin, we are acutely aware that TICCIIH is not represented in many countries where we know there is important industrial heritage - even where there have been recent UNESCO inscriptions. We therefore need your help to recruit new members, so in addition to renewing your own membership, please do your best to spread the word when you participate in conferences and meetings and publications.

Finally, one of the new features of our next congress in Montreal in 2021 will be a major session on National Reports. This will give all National Representatives (and National Correspondents where there is not yet a Representative) the opportunity to showcase their own country's achievements and to discuss some of the challenges they face. Now is therefore a good moment to consider how you will prepare your national report, bearing in mind that the session in Montreal will be plenary - everyone should be there!

REPORT

GERMANY

NAZI SHALE OIL INDUSTRY AND FORCED LABOUR: A DIFFICULT INDUSTRIAL HERITAGE

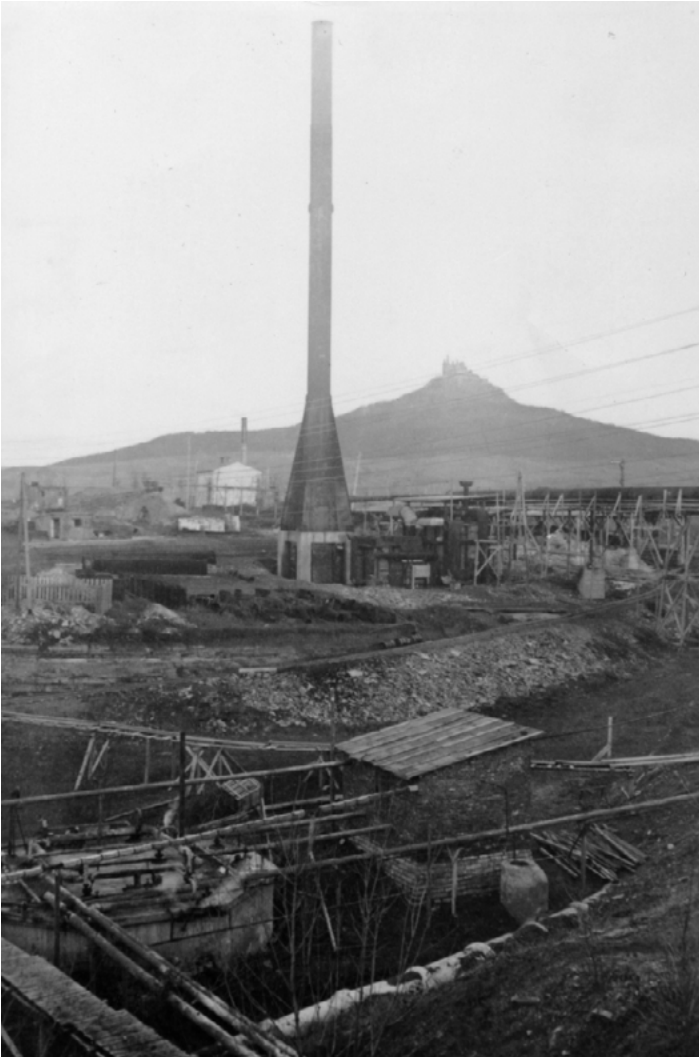
Dr Barbara Hausmair, archaeologist, State Office for Cultural Heritage Baden-Württemberg

During the course of World War II, a stable fuel supply became an increasing concern for Nazi Germany's war effort. In 1942/43 the regime ordered the implementation of four test facilities along the foot of the Swabian Alb (today part of the Zollernalbkreis District, State of Baden-Württemberg) for developing novel processes for the extraction of oil from the Swabian posidonia shale. When Germany lost access to Estonian and Romanian oil fields in 1943/44 and many of the middle-German synthetic oil plants were heavily damaged by Allied air raids, the fuel situation became precarious. An emergency program, the so-called Geilenbergstab, was launched in order to rebuild damaged factories and find new resources. In this framework, the Unternehmen Wüste (Operation

Desert) was initiated: a large-scale shale oil project connected with the Swabian test facilities. Shale oil comes from sedimentary rocks that contains kerogen, which releases a petroleum-like liquid when the rock is heated. Although it was known that the posidonia shale did not contain much kerogen (approximately 5%), it was decided to build ten shale oil factories (Wüste I–10) based on the technology developed by the test facility of the Deutsche Ölschiefer-Forschungsgesellschaft in Schömburg. The so-called Meilerverschmelzverfahren was based on a process of open-cast mining, the extraction of oil by pyrolysis in shale piles followed by condensation processes. The construction works started in summer 1944.

Despite the catastrophic war situation, an enormous amount of material resources and technical knowledge (e.g. engineers from the Leuna-plants and from Estonia) were mobilized and vast areas of land confiscated. Seven sub-camps of the Natzweiler concentration camp were established and more than 12,000 concentration camp prisoners as well as a yet unknown number of prisoners-of-war and forced laborers were deported to the region and forced to build the factories under inhumane working and living conditions. At least 3,470 concentration camp prisoners died from exhaustion, malnutrition and arbitrary violence of the guards. Due to bad planning and shortness of building materials only four factories went into production until the end of the war.

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The condensation facilities of Wüste 2 at Bisingen taken by French military after the war (KreisarchivZollernalbkreisFotosammlung UW Neg. 8/8A).

The Meilerverschmelzverfahren turned out to be highly inefficient - a technological failure with a total yield of only 840 tons of low-quality oil. After the war, the French occupation government initially continued production but then closed the factories until 1948 because of low profitability. Machinery and metal infrastructure were dismantled and sold-off, most buildings as well as the barracks of the camps were leveled and the land partially re-cultivated. The local population had to cope with environmental pollution for decades, through contaminated water bodies or air pollution caused by auto-ignition of shale piles and tailings.

The Baden-Wuerttemberg State Office for Cultural Heritage Management currently runs a documentation project that assesses the archaeological traces of over 30 Natzweilersatellite camps in Baden-Wuerttemberg and associated industrial sites. The heritage of the Unternehmen Wüste is a focal point of the project both for the cultural significance this industrial complex bears in



The factories are traceable as crop marks from the concrete foundations of storage tanks and railways at Wüste 3/Engstlatt (Braasch/Landshut).

regard to crimes of the Nazi regime in Wurttembergas well as an exemplary case for technical innovation gone wrong due to war-related turmoil, bad planning and insufficient engineering.

Although the re-cultivation measures of the post-war period destroyed large parts of the Wüste-factories, the oil industry has left substantial traces in the region's landscape. Archaeological remains of the factories are traceable as crop marks in fields or through terrain alterations resulting from the facilities' narrow-gauge railways, backfilled mining pits and shale piles. The mine of the Wüste 2-factory at Bisingen still exists as prominent incision of c. 600 m in the topography. An entire shale pile (c. 350x20x3 m) has been preserved as a prominent landmark at the site of Wüste 4/Erzingen. At several sites, buildings for the factories' electrical substations or oil tanks are preserved. In Wüste 10/Zepfenhan almost the entire concrete infrastructure of the condensation facilities is intact, including foundations of machines, settling basins, storage tanks, pipeline pillars, and the concrete shell of the fan system. Since only few technical documents concerning the factories have been preserved, the physical heritage is an important source for

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Kiruna looking from the old mine (Luossavaara) to the new one (Kiirunavaara). Photo: Heinz-Josef-Lücking

reconstructing the spatial layout of the plants in connection with the analysis of historical aerial reconnaissance images of the Allied forces.

Associated with this industrial heritage are the former locations of seven Natzweiler concentration camps and three cemeteries where the victims of the *Unternehmen Wüste* were reburied after the war by the French occupation government. Although all former camp grounds are partially overbuilt, geophysical surveys and excavations at the former Bisingen and Dautmergen camps have revealed a substantial archaeological record consisting of barrack foundations, rubbish pits and pavements. In the 1980s grass-roots initiatives started to research the history of the *Unternehmen Wüste* and, with the aim to draw attention to the fate of the victims, began to re-discover the traces of the oil industry as valuable means for their political and educational efforts. The engagement of these initiatives and memorial initiatives at other sites of the Natzweiler concentration camp complex has been honored by the European Commission in 2018 by awarding the sites with the European Heritage Label.

The inventory of camps and industrial sites that is currently being

compiled in the Natzweiler project is an important basis for the Baden-Württemberg Heritage Office for developing a conservation management plan for the heritage of Nazi war industry and forced labor. Dealing with such young and conflicted archaeological heritage is a rather recent development in Germany, thus there are various methodological and practical challenges that have to be tackled. More importantly though, engaging with heritage like the one of the *Unternehmen Wüste* is relevant in terms of widening the archaeological perspective on Nazi terror not only from internment camps but incorporating industrial remnants as parts of a heritage landscape that embodies the spatial dimensions and disastrous entanglements of war, industry and the exploitation and deaths of thousands of people from across Europe under the Nazi regime.

Editor's note: The Unternehmen Wüste sites forms one of the case studies in the TICCIIH comparative study of the oil industry heritage, which will be published in the spring of 2020.

Contact the author

INDIA

ANCIENT ZINC SMELTING

Dr Rima Hooja

Zinc is a difficult metal to handle, but at Zawar in southern Rajasthan it was extracted and smelted from around the 14th century CE, and maybe earlier. The exact date of early mining activity in the Indian sub-continent is unclear, but it was known to the Harappan (or Indus Valley) civilization (circa 3200-2500 BCE). Evidence of ancient mines and metallurgical slag heaps and other debris may be noted in Rajasthan and adjoining areas of Gujarat, linked to certain mineral belts along the Aravalli Range. At least 145 localities have been identified with evidence of ancient mining and metallurgy. There are ancient mine openings and worked-out mine shafts on many hills in Mochia, Baroi, Balaria and Zawarmala, in the Zawar area of Rajasthan, where current mining is also carried on.

The Zawar mines are 44 km from Udaipur, the north-west desert province, and cover an approximate area of 67 km². The terrain comprises hilly lowlands and narrow valleys, between 90 m to 300 m above sea level. The area is one of the oldest lead-zinc-silver extraction areas in India. It stretches for at least 10 km along the banks of River Gomati.

Radiocarbon dating of wooden remains (ladder-ways, haulage scaffolds), found in the ancient mines at Zawar, indicate that during c.4th to 1st centuries BCE (Mauryan period) mining occurred in this region and nearby parts of southern and south-eastern Rajasthan. The mining and metallurgical industry apparently went into oblivion by the end of 7th Century and was re-started or rediscovered in the late 14th century. Vast quantities of lead, silver and zinc were then extracted and smelted.

The wider Zawar area has evidence of early mining activities, open cast and tunnelling, for ore containing lead-silver-copper. Mine shafts etc. and various material remains were noted in 20th century reports. The area also has physical remains of smelting retorts, on-site kilns, hill height debris mounds and modernized working mines from which zinc continues to be extracted and smelted.

In the Zawar area itself, remains of ancient mines, iron chisels and pestle-like hammers were noted in situ at ancient workings in the Mochia mine. Remains of wooden stairways, haulage scaffolds, and staging and drainage leets etc. also survive in many mines. Samples taken for radiocarbon (C14) dating from a scaffold and leet in the Zawar Mala mine have given C14 dates of 170 ± 60 BCE, and CE 30 ± 50. The dates are comparable to other ancient silver/lead workings at Rajpura-Dariba and Rampura-Aguncha, located in the same sub-region.



A mound of distillation retorts and possible furnaces debris at Zawar.

Radiocarbon dating of charcoal from piles of charcoal and wood recovered from the ancient mines and heaps of smelting debris at Zawar, Dariba and Agucha by the British Museum, London, has provided the main framework for the chronology, particularly for the early periods. Apart from these radio carbon dates, there are some known historical references to Zawar and other places, as well as some monuments in the vicinity of these areas especially the ruins of fort, dam and temples, whose dedicatory inscriptions (at some places) are clearly dateable. Together these elements enable a reasonably coherent picture of the development of mining and smelting industry in the area.

Work in the Zawar mines area led researchers from the MS University Baroda, the British Museum, and Hindustan Zinc Ltd., Udaipur, and others, to conclude that an indigenous process of zinc smelting was known as early as the 14th - 15th century CE. This predates zinc production in Europe. Analysing mining techniques, ore sources, and preparation of 'charge', zinc distillation process, and so forth, researchers believe that originally only silver and lead was worked at Zawar, with zinc smelting a later development. Zinc extraction and smelting at the Zawar mines developed into a major industry by the 16th century and continued to flourish until the late 18th century. This is attested by the vast slag heaps at Zawar Mata, 25 miles southeast of Udaipur, along with zinc retorts, disused furnace sites etc. and remains of old structures and temples over a large area.

In India various zinc smelting processes are described in Sanskrit texts like Rasa-Ratnakar (2nd century CE), Rasprakash-sudhaka (12th century CE), Rasratnasammuchchaya (13th century CE). These texts recommend distillation and condensation techniques for extraction of mercury and zinc from their ores. The archaeo-metallurgical investigation at Zawar discovered intact ancient zinc smelting furnaces still containing their full charge of 36 retorts. The furnaces were used to carry out one of the most sophisti-

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cated pyrometallurgical operations in vogue in this part of world before the industrial revolution in the West, a process which is still basic to all high temperature distillation and condensation operations. (Craddock et.al. 1985).

Zawar mining and smelting technology apparently pre-dates other high temperature pyrotechnologies across the world. Acknowledging this, the American Society of Metals (AMS) declared Zawar as an Historical Landmark, placing a plaque at Hindustan Zinc Ltd at Zawar in 1989:

At this site are preserved the zinc retort distillation furnaces and remnants of related operations. The technical sophistication and application of scientific principles are unparalleled elsewhere in

the medieval period. The element of standardization and mass production foreshadow the industrial revolution. This is the earliest example of high temperature distillation operations... The operation first supplied zinc for brass making used for fine instrument making in Europe, a forerunner of the Industrial Revolution.

The archaeo-metallurgical importance of Zawar has been described by H.V. Paliwal, K.T.M. Hegde, A.K. Biswas, Paul Craddock, Lynn Willies and L.K. Gurjar in various research papers and also by J.S. Kharakwal in his 2011 book titled Indian Zinc Technology in Glob.

COLOMBIA

THE PACHO BLAST FURNACE EXCAVATION

Roberto Lleras and Luzed Moreno, archaeologists

The oldest ironworks in Colombia, the Ferrería de Pacho, was almost completely destroyed about a century ago, despite its importance as a landmark in the industrial history of the country marking the beginning of industrial metallurgy in Colombia.

Its history can be traced back to the early years of independence from Spain. The new republic, Nueva Granada (afterwards Colombia), found itself deprived of the Spanish steel and iron which had been imported under a monopolistic regime during colonial times; local production seemed the logical option. The German mineralogist Jacob Wiesner was granted a license in 1814 to explore the countryside around Pacho, northwest of Bogotá: he found iron deposits and managed to smelt a few samples of iron in a rudimentary furnace. In 1822 the government authorised the constitution of a company to exploit the mines. The Ferrería was built north of the village in a site with easy access to the mines, the road to Bogotá and two rivers that provided abundant water power. In 1827, Egea, Daste y Cía took control over Wiesner's plant and brought in a team of foreign technicians. In 1833, they asked ironmaster Medardo Merlin to build a blast furnace, a task completed in 1837; however, the furnace broke down. Robert Bunch took over the direction, repaired the furnace, built a puddling furnace and managed to sustain a stable production of good quality products for a few years. However, the operation of the steelwork suffered much from the low market demand and the competition of imported British steel. In 1857 Bunch died and decay began; then there were



The outside of the workshop ca 1930.

successive closures, re-openings and, despite some efforts, final closure in 1879.

Prior to our archaeological intervention, about half a dozen historical studies and a limited archaeological survey of the Ferrería had been carried out. There is also an illustration from 1858 and several photographs, taken around 1930, that are extremely useful. As we were working within a restoration project we aimed to provide as much information as we could about the internal operation of the steelworks, right from the moment when the raw materials arrived until the finished products were delivered, including all the auxiliary systems and processes. We also intended to contribute information that could be useful for restoration.

The Ferrería de Pacho complex was organised along a functional axis whose nucleus is the blast furnace, a rectangular based pyra-

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The blast furnace during restoration.

midial structure built of stone and bricks. On the front and lateral façades there are openings under stone arches. The pyramid rises to a height of 9.39 m where a terrace, surrounding the smoke-stack, offers access to the charge door of the furnace. Access to the terrace was possible through a bridge connecting it with warehouses where iron ore, charcoal and chalk were deposited; abundant remains of which were found during the archaeological digs. It seems that the bridge had some sort of rails along which wagons could run. The warehouses, the bridge with its rails, the wagons and the mills where the materials were crushed have disappeared. Only part of the buttresses that held the bridge remains. The ventilation system of the blast furnace included a network of tunnels through which air, heated by a central fireplace, circulated; inside the tunnels an iron pipe conducted pressurized hot air that was pumped into the furnace through nozzles located at both sides of the structure. Air pressure was obtained from a wooden piston operated by a large waterwheel that was used also to move a hammer and possibly other devices, such as the mills used to crush raw materials; only part of the water inflow structure, drain-ages and the buttresses of the wheel remain.

The main frontal arch of the furnace shelters the discharge structures of the furnace; the slag extraction door with a stone channel that conducted the molten slag to a space where it was left to cool and be removed and, further down, the vent through which molten pig iron was extracted from the furnace. For unknown reasons, the lower part of the structure had been buried right after the furnace was shut down, so that it was not visible even in the photographs taken in the 1930s. Large quantities of slag and pig iron were found outside the furnace; the most striking find, however, was a large block of pig iron that completely filled the crucible of the furnace, indicating that it was not discharged when shut down.

Adjacent to the blast furnace was the rectangular workhouse, a building, 16 x 12 m, with thick stone and brick walls of which only the foundations remain. Inside, we were able to recover the foundations of a heavy structure, partly visible in an original photograph, probably an ensemble of winch and hammer used to handle and work large chunks of cast iron taken out of the puddling furnace. The puddling furnace was located adjacent to the east wall

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of the workhouse; it had the highest smokestack in the plant; again, only the foundations remain. Nevertheless, the excavation provided a clear picture of the spatial relation of the blast furnace, the puddling furnace and the winch-hammer ensemble, allowing us to understand the processes that lead from raw materials to partially laminated cast iron bars and plates. Additional historical and photographic evidence helped us to understand other features of the workhouse; it was a single floor structure with a Spanish style tile roof with a large opening to allow the heat and gases produced by the furnaces to escape.

Mechanical energy from the main waterwheel was taken inside the workhouse by means of pulleys, belts and levers. A second smaller waterwheel was located downhill, on the drainage channel that came from the main one. It seems probable that another building, whose foundations are near the second waterwheel, housed

a roller laminating machine mentioned in old documents. There was also another smokestack at the side of this building, possibly an auxiliary furnace used to heat bars and plates prior to rolling. A fourth smaller smokestack, not yet found in archaeological digs, may have corresponded to a forge, also mentioned in documents. Blacksmiths here produced many types of small products for households and farms.

When completed the research and restoration project will provide local people, students and tourists with an archaeological park where the early history of industrial metallurgy in Colombia will be exhibited and explained. The site is now protected and registered in the national record of historic monuments.

Contact the author

TURKEY

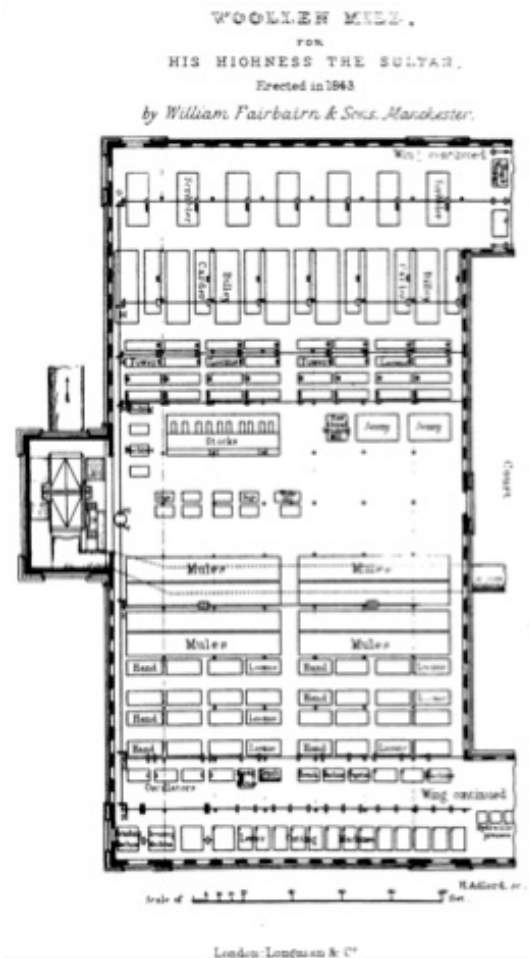
KARTEPE BROADCLOTH FACTORY

Ferda Özparlak Şahin, High Urban Planner, Kartepe Municipality

Kartepe is a town in northern Turkey along the Silk Road route between Europe and China, near the Black Sea. This town is home for a broadcloth factory which is very important example of industrial heritage. It was founded in 1844 to develop a broadcloth industry for Ottoman Empire under order of Sultan Abdulmecit. The leading English factory engineer Sir William Fairbairn moved to Istanbul and designed the engineering project for the factory, and manufactured the waterwheel which provided the power to the machinery. The architectural project was prepared by Garabet Balyan, the architect of such famous buildings such as the Dolmabahce Palace and Çırağan Palace in Istanbul. All the machines in the factor were bought by Ohannes Dadyan from England.

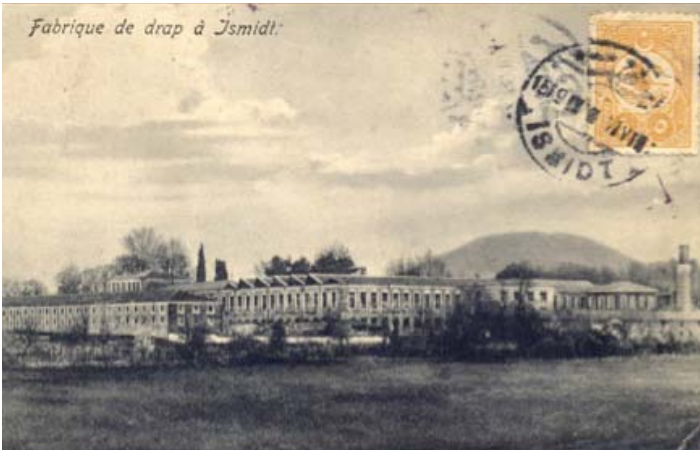
The Broadcloth Factory is one of the earliest examples in which iron construction was used in an industrial building. In fact, this factory is the first textile factory in which a water mill and a steam engine were used together in the Ottoman Empire period. This factory is quite unique in different ways, as a very rare example of the development of industry in the Ottoman Empire, and because Garabet Balyan was involved in the design.

In Fairbairn's classic *Treatise on Mills and Millwork* he mentions that in wool factories, it has been observed that there are revolu-



A section and plan of the main building with the layout of the spinning machinery showing the water wheel and line shafting. The illustrations are from Fairbairn's *Treatise on Mills and Millwork*, Part 2, 2nd Edition, 1865. Thanks to Mark Watson.

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A 19th century French postcard view of the Broadcloth Factory.

tions in placing and the designs of the factories. Fairbairn states that this weaving factory is built over a water source. The production floor was all a single floor, the roof is supported by 20 feet high iron columns.

In 1839, Fairbairn came to Istanbul and saw the Grand Bazaar and inns, and recorded how impressed he was by the architecture. Then he planned the factory according to bazaar technique, which allows the building to be lit from above through the roof. Fairbairn also mentions the famous Broadcloth Factory in Kartepe, which was built on 1843, as an example on the second volume of his book, as a source for technological improvements in industrial buildings. He explains about the general properties of the building with diagrams of the factory. He designed the main factory building around a middle court. Buildings next to the entrance to this court contained the Sultan's rooms and study rooms. These were designed specifically for Sultan Abdülmecid according to his orders, as he was interested in the process of construction. Similar rooms and this organization have been observed in the plans of other factories in Ottoman Empire since Sultans were detecting and observing some of the constructions.

The rectangular area for the weaving machinery was located as the main production building. There is a decorated gateway on the entrance. Side wings were used for storage, steam engines etc. The main building or the rooms on the wings were accessible from the patio in the middle, planned as a square. The water wheel is located on a separate building. This water wheel is the source of the energy for every machine.

The factory has started to be built to produce cloth for the Ottoman Empire. Sultan Abdülmecid personally opened the Factory on 26th May 1844. It was managed by British factory manager James Binns Neys. After 1846 it has been decided by the government would run the factory. On 1856, the products have been produced were displayed in Paris for their high quality.



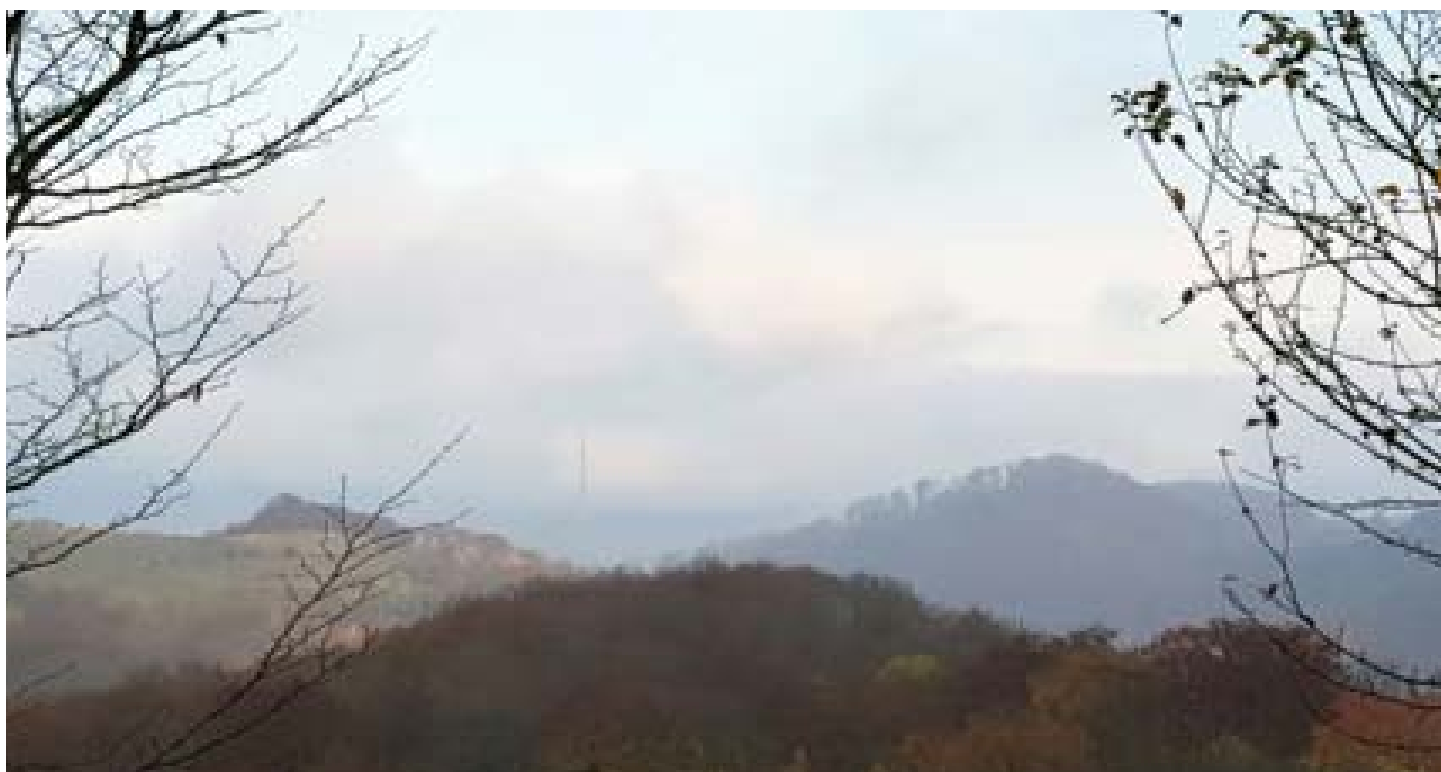
The current condition of the Broadcloth Factory.

The weaving workshop, warehouse with chimney, water storage, hydroelectric power plant and a hunting lodge is located around the Broadcloth Factory. The workshop was added to help the main factory for the increased demand in production. Today, only a part of the roof and masonry walls remain. A 120 m rail transportation system connected the main building and the weaving workshop. The Hydroelectric Power is one of the first ferro-concrete plants, built in the 1900s by Germans. The main building containing the machine system is contains a water system and a bridge. The building is still useable today.

The hunting lodge was built in the 19th century in the form of two-storey T-plan scheme. It is a structure that the Sultan used in the periods when he came to hunt. It is known that there was a light railway under the ground, from the factory to the port, although the date of construction is not known.

In the 1920s, 10,750 workers were registered to the factory. After World War I, the British Earthquakes also harmed the factory drastically over years. Today, the land is under military protection, therefore the residues are preserved. The factory and the buildings surrounding it are registered as a cultural heritage as Istanbul Culture and Nature Protection Board in 25th June 1998. Kartepe Municipality prepared a restoration project with funding for the Broadcloth Factory and the correlated buildings.

The Broadcloth Factory is very important for the development of the Ottoman Empire in terms of the revolution from workshops to factories in the textile industry. In the last 20 years, the importance of industrial heritage has increased in Turkey. In case of protection and re-utilizing of the factory takes place, Kartepe Broadcloth Factory will be the first example of industrial heritage as well as creating a bridge to the World Heritage list candidacy. Kartepe Broadcloth Factory is of great importance in terms of industrial history, urbanism and architectural features. Kartepe Municipality's aim with this project is, to contribute and inspire restoration projects in terms of Industrial Heritage as well as protection of historical values in sense of social, cultural contribution.



Zlatna Chimney, Apuseni Mountains in 2018. Photo: Ioana Stan

ROMANIA

THE GOLD QUADRILATERAL

Dr Gabriela Pașcu, Faculty of Architecture and Urbanism, Timișoara, Cultural Association Active Heritage / Asociația pentru Patrimoniu Activ – PACT

The Gold Quadrilateral located in the Apuseni Mountains in Romania is a hot-spot on Europe's gold map. Desired in turn by the Roman Empire, Ottoman Empire, Habsburgs and now by extraction companies from all over the world, it's a place where many felt like masters, without helping the places and the community. It has a surface of almost 1000 km² – an entire industrial landscape. The four known points that form the quadrilateral are Brad (in the West), Certej – Săcărâmb (in the South), Baia de Arieș (in the North) and Zlatna (in the East). Each of these establishments had a role in the industrial development of the territory.

Brad became the most important administrative city; Certej – Săcărâmb was one of the main gold mines and the location of the first mining school built in Romania; Zlatna was an administrative centre, exploitation point and processing point; Baia de Arieș became one of the main exploitation points. In the area determined



Gold prospectors with 'șaitroc', parallel between past and present. Background photography - Gurabarza exploitation area (Brad area). Collage by stud.arch. Mircea Braje

by these four places there are a large number of small villages, many of them having mining as the main source of livelihood. Mine closures in 2006 had a major impact on their existence.

This being the context, in the last year a team of motivated architects and students from the Faculty of Architecture and Urbanism Timișoara (arch. Gabriela Pașcu, arch. Mirela Szitar, stud.arch. Adrian Bancoș, stud.arch. Eliza Bistrean, stud.arch. Mircea Braje, stud.arch. Ioana Stan), developed a research project that aimed to understand what is happening and to create a parallel between the old mining system (establishments, infrastructure etc.) and its current situation.

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The journey was a difficult one, considering the size of the territory in which many parts still remain unrevealed. For the students it was a first contact, for which they made an effort of understanding, of decomposing and recomposing of elements and stories. The territory was analyzed from the point of view of its historical evolution, the implicated actors, present strategies proposed for development, the natural landscape, cultural landscape, and industrial landscape and of "perforated" landscapes. The conclusions were very different and numerous, including:

- In the 18th –19th centuries, the establishments developed near water courses, because water was used for the preparation of the core. Therefore, there was a close relationship with the natural environment.
- In the 20th century there was an intense transformation of the existing inhabited centres, brutal at times, but from which we keep a lot of elements belonging to industrial heritage (housing districts, infrastructure, industrial sites etc.).
- During the period of maximum industrialization from 1920 to 1970 settlements developed exponentially with the industrial function. In many cases have been observed migration of the social and community functions from the historical center to the new industrial one.
- Settlements are composed from a mixture of vernacular,

modernist and socialist architecture (especially in the case of housing and social functions).

- Certain industrial structures are abandoned and demolished for ecological reasons.
- Abandoned residential spaces which in time become sources of building materials. But there are still unchanged colony houses, administrative offices etc.
- There are small museums that remember the gold mining (Brad Gold Museum, Certej Mining Museum, Mining Museum Roşia Montană), short train rails declared historical monuments, national parks, Roman galleries declared monuments, etc.
- Despite all problems there still are opportunities and these are within recognizing the values of the mining heritage. Communities are usually open to tourism and they want their values to be maintained.

These are only a few points that were approached during the research. The analysis will be continued in 2020 when a brochure will be published with conclusions and complete rehabilitation proposals.

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

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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.ticcih.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.ticcih.org

ISSN: 1605-6647

WORLDWIDE

GERMANY

PUBLIC HISTORY WORLD CONFERENCE

Dr Thomas Cauvin, President of the International Federation for Public History, Assistant Professor, Colorado State University

In August 2020, the World Conference of Public History will take place in Berlin, Germany. Organized by the International Federation for Public History, in collaboration with the Free University of Berlin, the National Council of Public History, and the American Historical Association, the conference will attract scholars, professionals, practitioners, and students from all over the world.

But let us be honest. Despite recent development in the field, public history remains largely unknown outside the circles of its practitioners. When we explain that we practice, study, teach, or do public history, our interlocutors usually raise their eyebrows, confessing their ignorance, asking for more details because the expression 'public history' still triggers some curiosity.

Public history is based on the wish to democratize the process of doing and communicating history. Public history is a field of the historical discipline that encourages the communication of history to large and lay audiences, moving away from small circles of peers discussing their research. Public accessibility – physically and mentally – to sources, narratives, and interpretations is critical to the field. One can witness public history through various means of communication such as exhibitions and collections, documentary films, books, blogs, guided tours... etc. We are surrounded by examples of public history. If public history is sometimes built on old practices, it is also a sign of its time; it reflects a context of change in the way we preserve, research, interpret, study, communicate, use and consume the past.

Democratizing the history-making process also relates to increased public participation. Historical scholarship can be done by academics, but – and this is another key component of the field – can also take place in museums, archives, consulting companies, national parks and other cultural and historical institutions. Symbolized by citizen sciences and crowd sourcing projects, public participation has deeply impacted some public history projects. Public interaction and user-generated contents are some of the most exciting developments in the field, and but question issues such as co-creation, co-production, and shared authority in history-making.

If some of public history practices - curating, collection and heritage management, oral history, or historic preservation - have been around for a long time, the field of public history started to develop in the 1970s in North America where the terms were first coined. The aims were initially to reconnect different practitioners and to train history students to careers outside academia and education. The National Council on Public History, the main association of public history in the USA, now lists more than 200 university training programs in the country. Public history has, since the 1990s, also developed in other parts of the world. Public history programs exist in many European countries, in Brazil, in Australia, in New Zealand, in Russia, and in China. Created in 2011, the International Federation for Public History has aimed at connecting projects, professionals, students, and other practitioners all over the world. National associations of public history have been created in Brazil (Rede Brasileira de História Pública), in Italy (Associazione Italiana di Public History, AIPH), and more recently in Japan (パブリックヒストリー研究会), attesting the development of the field. These international networks attest of the need to discuss and redefine the role of history and historians in contemporary societies.

You can contact us for more information about events and collaboration, visit our [website](#), or participate to our [Facebook forum](#).

NEW ICOMOS INDUSTRIAL HERITAGE SCIENTIFIC COMMITTEE

Stephen Hughes, TICCIH General Secretary

The formation of the Industrial Heritage International Scientific Committee (IH ISC) of ICOMOS means that TICCIH cannot now claim to be the only international body providing advice on the

global industrial heritage. An Industrial Heritage Working Group was established at the ICOMOS General Assembly in Florence in 2014. This consisted of eleven ICOMOS members of whom four were also active members of TICCIH, who have commented on the evolving documentation. Mary-Liz McCarthy of ICOMOS Ireland has been secretary of the group.

The future and form of international industrial archaeology has been profoundly changed by the decision to formulate industrial archaeological principles with the passing of the Nizhy Tagil Char-

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ter in 2003. The Charter was always intended to be presented to ICOMOS for ratification and for eventual approval by UNESCO. Industrial archaeology has in effect become more firmly integrated into the international heritage structure.

TICCIH looked to ICOMOS to help produce the Joint (later Dublin) Principles and a ICOMOS/TICCIH working-group was set up to help formalise the Principles in 2006. The Irish ICOMOS National Executive Committee became a leader in this process under Mary McMahon, TICCIH National Representative for Ireland and former President of the Industrial Heritage Association of Ireland. As part of this process the various national executive committees of ICOMOS became aware of TICCIH bringing forward the Nizhny Tagil Charter of 2003.

A final document was considered during the Proceedings of the Scientific Symposium of ICOMOS hosted in Ireland in October 2010 with the TICCIH President Patrick Martin present and able to participate in discussions. The following year the General Assembly of ICOMOS in Paris formally approved the Dublin Principles.

During this Dublin Principles process of joint review the seven categories of the Nizhny Tagil Charter were rationalised into four main headings:

- Documentation & Understanding
- Legal & Administrative Principles
- Conservation & Maintenance
- Presentation & Communication

This process has considerable implications for the future of the relationship between TICCIH and ICOMOS. The national scientific

committees of ICOMOS are usually part of the network of the 25 International Scientific Committees of the organisation. That this international network is growing within ICOMOS internationally is indicated by the recent decision of ICOMOS Germany to create an Industrial Archaeology National Scientific Committee to process the demands of working in the field initially in response to joint working with TICCIH Germany over the Industrial and Mining Landscapes Conference held in October 2013 in Freiberg. Joint National TICCIH-ICOMOS Industrial Heritage Committees now also exist in Australia & Hungary and joint working arrangements also exist in other countries and continents (as with Argentina & India).

ICOMOS internationally has a membership of some 12,000 while TICCIH's International Membership is 330. Effective implementation of the Dublin Principles is going to need a viable structure able to operate effectively between the organisations. Within the United Kingdom where there are 35 TICCIH members and over 400 ICOMOS members there has already been talk of the need to establish a UK Industrial Heritage National Scientific Committee. That industrial archaeology has so effectively entered the mainstream is evidenced by the fact that 40% of all work now undertaken by archaeological units in the UK concerns industrial archaeology.

The Joint TICCIH-ICOMOS Memorandum of Understanding and Action Plan provides a vehicle whereby TICCIH continues to provide World Heritage Studies for the general benefit of the international industrial heritage.

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FOR HOUSING OR FOR MANAGING? TEXTILE COMPANY TOWNS IN EUROPE

**Professor Bartosz M Walczak, TICCIH Poland / Lodz
University of Technology, Poland**

This article deals with selected functional, spatial and architectural issues related to the development of company towns in the European textile industry. It is based on the results of research published in the book awarded in 2013 with the European Union Prize for Cultural Heritage. The research covered the period

1771-1914: from the creation of the first modern textile factory in Cromford (UK) to the outbreak of the First World War. During the research, 283 sites were identified. This is certainly not a complete list, but allows an assessment of the scale of the phenomenon. In this respect, the textile industry cannot compete with heavy industries and mining. Company towns appeared, however, in all significant districts of the textile industry in Europe.

The first observation concerns the difference between the light (processing) industry and the heavy (raw material) industry: in mining, for instance, large areas were occupied by scattered buildings, and spatial systems were subordinated to the needs of extraction. Operations were associated with extensive environmental degra-

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dation. In textile production, lack of the above conditions meant complexes consisting of industrial and residential buildings could be more compact and regular, with a tendency for vistas towards factories, especially multi-storey ones. Despite this, initially, at the turn of the 18th and 19th centuries, there was no monumentalism in the textile industry, comparable to iconic industrial complexes of the period such as Arc-et-Senans (France) or Grand Hornu (Belgium), producing salt and .

The expansion of paternalistic settlements in the European textile industry reached its peak between 1850 and 1890, when most of the sites developed. Saltaire (UK), established 1851, is considered to be one of the best of them. In all Europe, it would be impossible to indicate a company town with equal quality of urban layout, architecture and functional program. Another noteworthy complex was Crespi d'Adda (Italy), existing since 1878. Both sites have been inscribed on the World Heritage List, which clearly underlines their universal values.

Considering that the majority of analysed sites were established before 1890, it is not surprising that urban planning concepts from the turn of the 19th and 20th centuries had relatively little influence on their shape. Perhaps that is why none of the discussed settlements was composed in such a picturesque way as Bournville or New Earswick (both UK) or Margarethenhöhe (Germany) founded around 1900. However, it can be noted that the textile settlement layouts, as well as the connection with greenery, constituted an important step towards the idea of garden cities. The industrialists, aware of their progressiveness, deployed those complexes to build a positive image of their enterprises. Among others, chocolate manufacturer Cadbury did so, emphasizing in advertising campaigns that its products come from the 'Factory in a Garden'.

In this respect, the Gmindersdorf established by Gminder brothers in Reutlingen, Germany, may be of particular interest. Construc-

tion of the estate began in 1903, i.e. just a year after the founding of the Gartenstadtbewegung, modeled on the English Garden City Association. The housing was designed by a renowned architect Theodor Fischer. His students included Bruno Taut, Hugo Häring, Ernst May, Erich Mendelsohn and Jacobus Johannes Pieter Oud, the next generation of architects and urban planners whose revolutionary concepts from the period of modernism in the 1920s and 1930s were largely a reaction to the malfunctioning of an industrial city.

Each branch of industry produced different types of buildings. That is why it is difficult to compare a foundry or a mine with a textile mill. Nevertheless, it is possible to draw some lessons from a comparative analysis of this kind. Throughout Europe, it is difficult to find a facility that harmoniously combines innovative structural solutions with excellent architectural treatment as the Menier factory in Noisiel-sur-Marne near Paris. The firm dealt with the production of chocolate confectionery. It seems, therefore, that enterprises producing luxury goods preferred a more decorative appearance of industrial buildings than those dealing with mass production. The same may be observed in the textiles. The silk factories in Willich-Schiefbahn (Germany) and Manningham (UK), as well as in Saltaire, which specialized in alpaca worsteds, had particularly elaborated façades. This did not mean, however, that outstanding architectural appearance was limited to this narrow group of factories. Undoubtedly, the size of the enterprise, the industrialist's aspirations and ideas, and even his religious denomination, had an impact.

Typically, the combination of wealth and ambition resulted in the impetus of investment. In this field it is difficult to match IK Poznanski from Lodz (Poland). The importance of its spinning mill can be demonstrated by the fact that it is the only textile factory from the late 19th century (and one of only a few industrial buildings) mentioned in Sir Banister Fletcher's *A History of Architecture*, one of the most important English-language studies on



Sources for the axiality and monumentality of towns like Crespi d'Adda, Italy, 1870s, and ZecheZollverein, Essen, Germany, 1930s, lie in 18th century palace architecture.

A LONGER READ



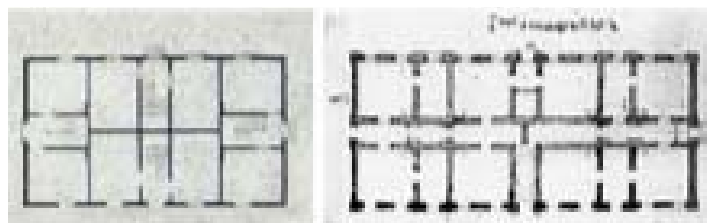
Spatial solutions such as those used first at Eisenheim, Germany, in the 1840s, which balanced control with privacy, were copied elsewhere, as in Ksiezy Mlyn, Poland, in the 1870s (Street views above, floorplans right).

this subject. What is more, its description appeared in the World Heritage List application of New Lanark (UK) as an example of the late 19th century company town, continuing the tradition of the Scottish precedent.

The tendency to give production facilities the features of monumental architecture with symmetrically shaped facades, sometimes constituting the closure of an axial urban composition, was quite frequent among the analysed complexes. The origins of such an approach should probably be seen in 18th century palace architecture, which is best demonstrated by the factory in Sindi (Estonia). Axiality and monumentalism were, however, deployed also in other branches of industry. Impressive spatial effects were achieved by the architects Fritz Schupp and Martin Kremmer, who designed the Zeche Zollverein XII complex in Essen in the 1930s. It is worth emphasizing the extremely striking similarity of the composition with the factory in Crespi d'Adda, and to some extent also with the spinning mills in Reddish (UK) and Ksiezy Mlyn (Poland).

The Krupp steel and armaments company in Essen was notable for making the largest investment in workers' housing schemes in Europe (in total, ten settlements were built in forty years). Had they all survived, they would be an excellent testimony to the evolution of urban concepts, architectural forms, as well as the housing standard provided to workers. It should be emphasized that Krupp's initial attempts did not stand out from the achievements of other European industrialists in this respect, which can be best illustrated by the banal layout of the Westend housing. Only the Altenhof and Margarethenhöhe estates were a real breakthrough.

No such momentum was achieved in the European textile industry. Nevertheless, some enterprises owned several settlements. Workers' housing schemes at the factories of the Saint Brothers

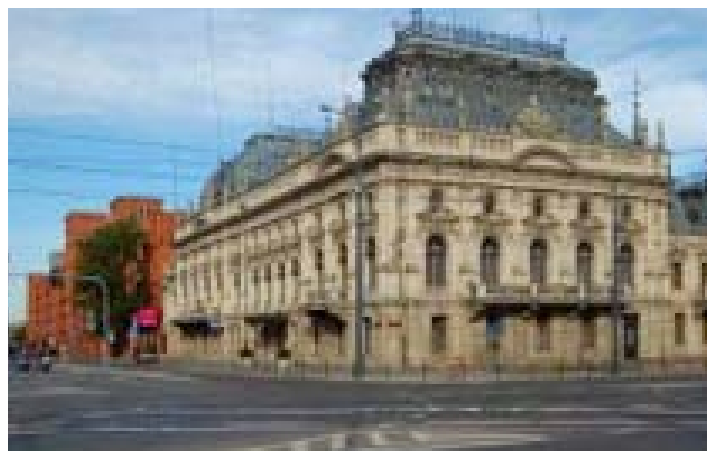


in Picardy were on the largest scale. The buildings (of two types only!) were located in the neighbouring towns of Harondel, Saint Ouen, Flixecourt and L'Etoile. Also in Mulhouse, Alsace, an unprecedented number of workers' houses was built, but the scheme was implemented by a group of industrialists, and therefore did not belong directly to any factory.

An important point of reference is Eisenheim, associated with the Jacoby, Haniel und Huyssen smelter in Oberhausen, considered one of the earliest workers' housing in Germany. For the first time in the Ruhr region, a system of four entrances to a residential building, located on the axis of each facade (Kreuz-Grundriß), was used here. A solution similar to houses built in Mulhouse according to the design of E Muller, mainly differed in the location of buildings in the housing estate structure. The French concept assumed building a house at the intersection of four plots so that the inhabitants of each quarter had a garden at their own disposal. The houses in Eisenheim were situated between the street and the yard, where detached outbuildings were erected. Individual buildings were not fenced and the gardens were grouped inside the quarter. Later, such spatial organization became a commonplace not only in Germany. For instance, there is a striking similarity between Eisenheim and Ksiezy Mlyn.

Multi-family barrack-like houses were a solution typical not only in company towns in the textile industry. This type of house was widely used, among others, in mining colonies and settlements in Upper Silesia (so-called familok), the best and best known example of which can be Borsigwerk in Zabrze. The same observa-

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Owners both showed off their prestige and sought a corporate image in their private residences, as Flixecourt, France, from the 1880s, and Lodz, Poland, 1900s.

tion applies to other types of workers' houses: terraced houses were extremely popular in the UK and used regardless of the branch of industry. Due to this, the spatial layouts of the housing estates were similar, while the relations between residential and production buildings differed significantly. An excellent example is Swindon, the town that grew around the Great Western Railways workshops serving the London-Bristol railway line. Rows of workers' houses did not differ from the spatial and housing standard in estates next to textile factories, while production halls were subordinated to the requirements of rolling stock production.

As already mentioned, the residential buildings for the workers of the factory of IK Poznanski in Lodz obtained the largest scale of the sites in question. They stood out not only by the number of storeys, but also by the monumental architecture and extensive courtyards. Especially the latter feature resembled the most unusual workers' settlement in Europe: Guise in the French department of Aisne. The latter was founded in the 1850s by Jean-Baptiste André Godin, owner of the iron foundry. The estate, consisting of multi-family buildings, so-called [familisters,] referred to the utopian concepts of Charles Fourier. Guise is also one of few company towns in which residential buildings dominated over those of production. In most cases, the opposite was the case: the factory towered above the workers' houses, and its dominant location enhanced this effect.

Company towns emerged as a result of rapid social and economic transformations caused by the industrial revolution, and they are an inseparable element of the 19th century European landscape. By the beginning of the 20th century, hundreds of factory settlements had been established on the continent. As industrialisation progressed, many traditional urban centres evolved into extensive, overwhelming agglomerations. Disapproval of this process badly affecting the existing spatial order was already expressed in the 1840s, which is best illustrated by the famous *Contrasts* by AW Pugin.

Opposition to those spontaneous changes was undoubtedly one of the motives for establishing company towns by industrialists with philanthropic views. The spatial order of such complexes can be seen as a counterweight to chaotically developing cities. Their location and spatial arrangement was an attempt to reconcile tradition and modernity. On the one hand, the return to traditional spatial relations known from farming estates was visible: the place of living = the place of work. On the other hand, there was an open plan, zoning and linearity of systems, announcing the projects of Arturo Soria y Mata and Tony Garnier. Especially the latter concept met the needs of the industrial era, while bearing the seeds of modern methods of urban design, developed after the Great War by the leaders of the Modernist movement, and in particular by Le Corbusier. That is why factory and residential complexes testify not only to the significant period of economic history, but also to the development of social thought, being one of the most important steps leading to the emergence of pioneering architectural and urban concepts at the turn of the 19th and 20th centuries.

Progressive spatial solutions contrasted with conservative attitudes in social relations. In the 19th century there were rapid changes in a class-divided society. The industrialists tried to strengthen their social prestige not only by alliance with aristocratic families, but also by playing the role of feudal lords. Estates and country residences were acquired, noble titles were sought. This process can be also traced in company towns, where industrialists themselves ruled not only a factory but also an adjacent settlement. What is more, everything necessary for the lives of workers and their families was provided or at least controlled by the factory owner. Both work and rest time were supervised. The novelty was the changed rhythm of life, determined by the shift work system, measured by clocks placed in visible places, usually on factory towers. Workers became cogs in a big machine. Thus, the company towns became spatial exemplifications of the total integration of production, work, society and, in many cases, of religion.

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Despite the company towns becoming common all over Europe, there was significant level of individuality and specificity of particular solutions at the regional scale. Cultural differences were apparently stronger than the universalism of 19th century capitalism. The complexes share a common socio-economic concept, but not spatial arrangement and architectural forms. At the same time, however, the influence of two countries is obvious: Great Britain and Germany. This reflects their position in the European economy of that time. British solutions are primarily associated with production technology and are dominant especially in the first half of the 19th century. The end of the century is the period of Germany's economic hegemony, with the impact on the architectural forms of buildings (Ziegelrohbau) as well as the organization of production and business management.

The relationship between the industrialist's attitude and the quality of architecture can be seen. The company towns in which philanthropy was combined with paternalism were characterized not only by a higher standard of living, but also by a more careful architectural design of buildings. A typical way of manifesting charity was giving impressive architectural forms to buildings such as hospitals, schools and community centres, an excellent example of which is the main square in Saltaire, surrounded by representative buildings of this kind. The industrialist's patronage had a similar impact on the quality of architecture. An unparalleled example of this attitude was the support of Antoni Gaudí's work by Eusebi Güell, which resulted in the famous crypt of the church in the Colònia Güell.

Finally, it is worth mentioning that European company towns gave a big impact on similar complexes established in the world. Early British solutions were a model followed not only in other countries of the continent, but also in the United States. An excellent example is the Samuel Slater factory and the related housing in Pawtucket. A significant number of complexes were formed in New England along the Piscataqua River Valley. In the second half of the 19th century, some North American company towns surpassed European complexes. On the Merrimack River in Massachusetts, the world's largest textile factories were surrounded by vast workers' housing schemes. While in colonial countries, company towns were built according to projects imported from Europe, only slightly adapted to local conditions. This was the case, among others, in India in the case of Angus Jute Works in Bhadreswar near Calcutta.

The life of a group of people in a relatively small area causes both positive and negative social phenomena. The former include the

feeling of belonging to the community that develops over time in almost every factory complex. Company towns, usually located in the countryside or on the urban outskirts, became habitats with relatively friendly living conditions, connecting elements of civilization and nature. They were microcosms with strong sense of belonging among residents. Spatial order and social harmony remained in many company towns until the 1970s, when the global crisis shook the traditional branches of European industry. The collapse of the factory meant not only the loss of the economic basis of existence by the residents, but also the end of the local community, the collapse of bonds that connected people, sometimes for generations. After the demolition of the factory in Catrine, West Scotland, the inhabitants of the village decided to commemorate it with a modest monument. The demolition of the building not only created a gap in the urban fabric, but radically demonstrated the inevitability of the economic process.

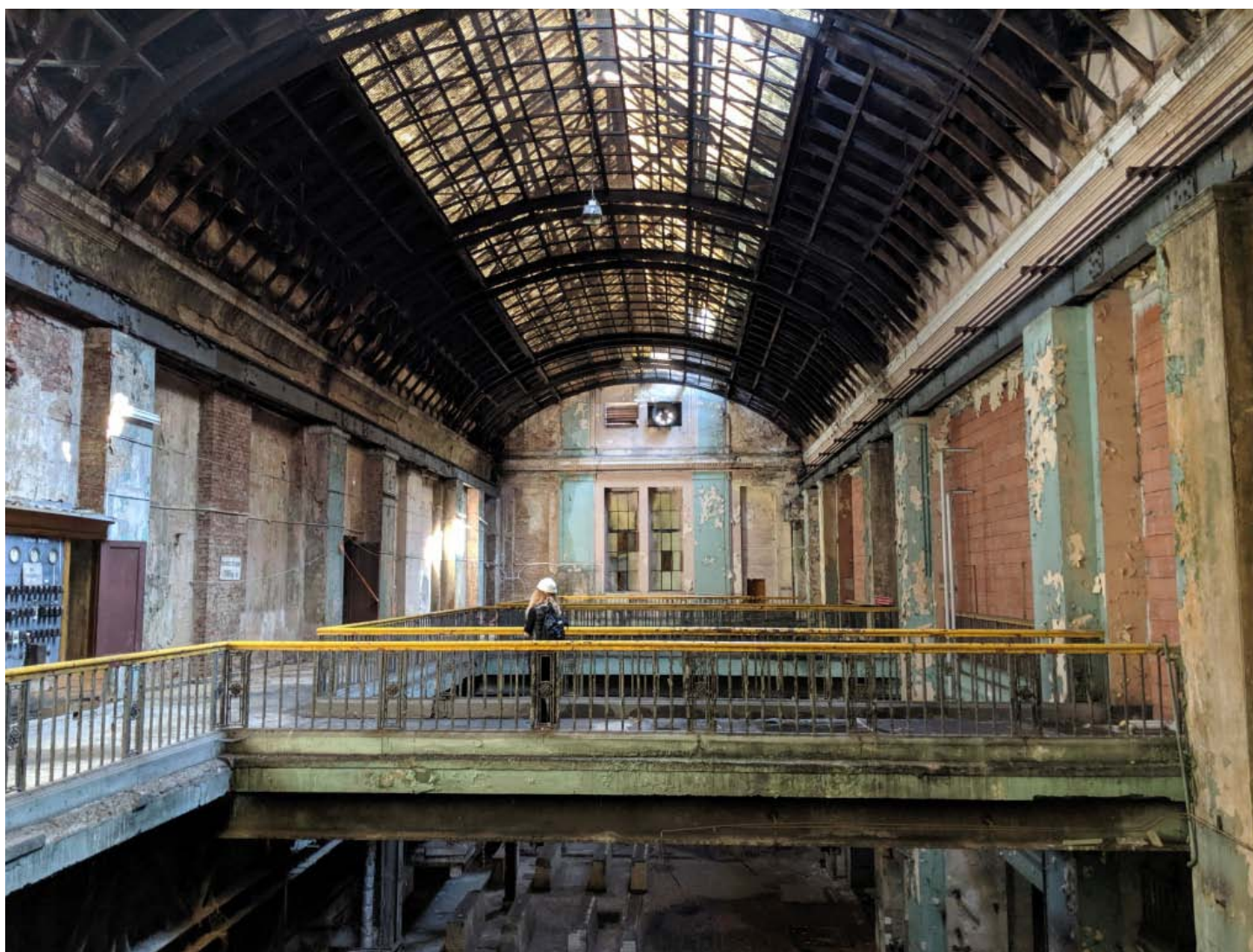
The transformation of European industry had a particularly negative impact on the degree of preservation of numerous company towns. Only a few complexes enjoy widespread recognition and full protection. This applies above all to the most valuable sites, inscribed on the UNESCO World Heritage list. However, these are isolated cases.

Usually, a change in the ownership structure affects the integrity of company town. As a consequence, all transformation processes take place separately in the factory and housing estate. Industrial sites, if they only survive, used to be interestingly re-used, whereas workers' houses usually became property of the inhabitants, who adjusted them individually to their needs. The result are far-reaching redevelopments, blurring original features of the buildings. What is more, significant social problems affected many former workers' housing schemes. Only some of them, due to their attractive location and spatial values, have not been affected by gradual degradation. Unfortunately, the lack of public awareness and dynamic investment processes may mean that in the near future in many regions of Europe once associated with the textile industry, only street names will testify to their history.

The author's *Company towns in European textile industry 1771-1914* (Zespoły fabryczno-mieszkalne w europejskim przemyśle włókienniczym w latach 1771-1914) was published in 2010.

Contact the author

CONFERENCE REPORTS



The enormous Szombierki Power Plant dates from 1920 and is a palace of power production, abandoned for years while a new purpose is sought.

BIG STUFF 2019, KATOWICE, POLAND

Ellie Swinbank and Stuart McDonald, National Museums Scotland

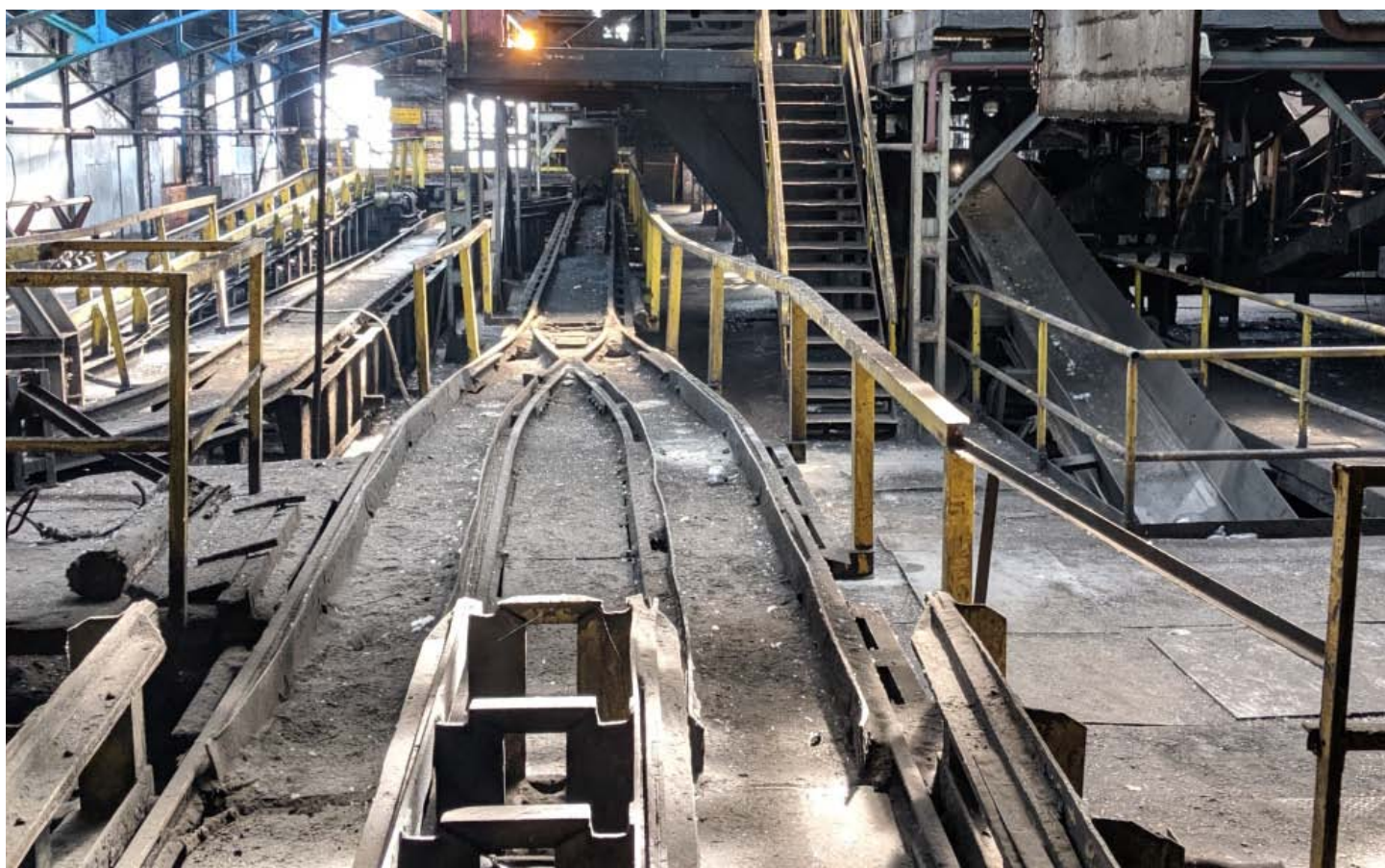
Big Stuff is a triennial conference focussing on the particular challenges of preserving and interpreting large technology objects. The first conference was organised by Dr Alison Wain in Canberra, Australia, and it is easy to understand why the sixth Big Stuff Conference was held in Katowice. The town is an urban centre of Upper Silesia, one of Europe's most significant industrial regions, rich in industrial heritage thanks to the long exploitation of its extensive coal reserves.

The first day of the conference was a real treat as we travelled

by coach to visit some of this heritage, which Piotr Gerber and his colleagues from the Foundation for the Protection of Silesian Industrial Heritage are working hard to try and protect in the face of rapid closure and destruction.

The crumbling palace of the Szombierki Power Plant in Bytom, the Upper Silesian Narrow-Gauge Railway Museum, with its knowledgeable and dedicated volunteers, and the UNESCO designated silver mine in Tarnowskie Gory, a beautifully developed museum with slick and professional tour guides, provided the perfect starting point for the conference discussions and established themes that would run throughout. These included how historic value and authenticity is determined, the challenges of preserving complex industrial sites, issues around urban planning and industrial landscapes, the re-use and interpretation of historic industrial sites and the passion and commitment of those

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The vast complex of the recently closed Wieczorek Colliery, currently being decommissioned and stripped of its fixtures but which, for the moment, still gives the impression that the workforce has just downed tools and left.

caring for industrial heritage, often in the face of lack of funds and political support.

The venue for the second day's discussions, the Muzeum Slaskie (Silesian Museum), opened in its current premises on the site of the former Katowice Mine in 2015. The galleries, library and workspaces are all underground, in keeping with the fact that this is where the coal came from, and helping to keep 150-year-old historic skyline free from obstruction, showing off the pit winding gear and the water tower. One of the most passionate and moving talks of the day was from Alicja Knast, Director of Muzeum Slaskie, who, having established this beautiful and sensitively constructed complex, now faces challenges from planners' intentions to build high-rise flats around the site, obscuring it from some angles and ruining the vista from others. Her frustration was palpable but hopefully the evident support in the room from international industrial heritage specialists and enthusiasts gave encouragement and may have some influence.

There was a real global contribution to the conference with a range of speakers from Europe, Australia, America, Saudi Arabia,

China and Taiwan. Themes ranged from digital preservation of heritage that is too inaccessible, dangerous or sizeable to be physically collected, to very practical and technical examinations of conservation treatments applied to materials and how such treatments are developed and tested. There were case studies of how digital media projects are used to engage the public with industrial heritage, challenges and opportunities presented by innovative reuse of industrial sites and how insights from the conservation of kinetic art installations can be applied to the benefit of industrial collections and buildings. While the topics were wide and varied, with the distance between topics often being as large as the geographical distance between the speakers' countries, there is no doubt that all were unified in their belief in the importance of the themes and were thoroughly engaged throughout the day, despite the large number of presentations and the varying styles of the presenters. It was a shame that there was not more time for questions between papers. Delegates were encouraged to use the coffee and lunch breaks for discussion, and they did so with enthusiasm, but it would have been useful to have some facilitated question and answer sessions. However, it is impossible to say which of the presentations should have been left out to allow for this as

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they all contributed to a fascinating and thought-provoking day.

The guided tour of the recently-closed Wieczorek Colliery on the morning of the third day was a stark reminder of how quickly industrial heritage can disappear. It is a matter of only a very short time, though, before this will be lost along with the structure of one of the best surviving examples of this type of coal mine in Poland, which showcases architecture by Georg and Emil Zillmann who were prolific in the region. The adjacent workers' settlement of Nikiszowiec is a beautifully preserved example of a self-contained community and questions arose about how it would retain its identity should the colliery complex disappear completely.

Following lunch and a tour of the Museum Walcownia, an elegantly interpreted former zinc rolling mill also in Katowice, there was an all-too-brief discussion of the future of Wieczorek Colliery with the Regional Conservator. There was an opportunity for delegates to discuss their ideas of how the site could be adapted for reuse and to share good examples of practice they have seen elsewhere. There is no escaping the fact, however, that while action must be swift to save it, the complexity of the site, lack of funding and perhaps a lack of political will are serious threats.

Further presentations followed and picked up many of the threads from the previous day as well as increasing the emphasis on adaptive re-use of industrial infrastructure. There was also a presentation from the Corning Museum of Glass looking at the challenges of preserving very large glass installations. This was a welcome different flavour to most of the other talks, with a fresh perspective on how to deal with the Big Stuff in our care.

The conference wound up with a very enjoyable evening reception at Maciej Shaft, a former colliery now converted into a restaurant, bar and venue retaining many of the original features and character of the mine. Before a delicious meal, delegates were treated to a tour, taking in the winding engine and the top of the



Hoist controls at the Wieczorek Colliery,

mine shaft. It was uplifting to see how this piece of industrial heritage has been carefully and sympathetically restored and is now enjoyed by many in its new lease of life.

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Participants at the Alishan Forest Railway excursion

2ND FORUM ON ASIAN INDUSTRIAL HERITAGE CONSERVATION, CHIAYI CITY, TAIWAN, 1-4 JULY 2019

Moulshri Joshi, architect, TICCII India

The 2nd Forum on Asian Industrial Heritage Conservation and the Field School were hosted by Asian Network of Industrial Heritage (ANIH). The theme of the Forum was 'Cultural Preservation and Practice of World Railways and Alishan Forest Railway', and experts from nine countries including the India, Thailand, Indonesia, Japan, Korea, Australia, UK, Slovakia, and New Zealand took part. An International Youth Field School was held parallel to the conference and field visits under the theme 'Preservation and Practice of Asia-Pacific Railway Heritage' where 20 practitioners elected to participate. These delivered their proposals under three groups identifying and addressing challenges in Railway Heritage conservation.

The city of Chiayi, led by their dynamic mayor and supported by Forestry Bureau, Chiayi County Government, Chiayi City Government, Bureau of Cultural Heritage, Ministry of Culture. The Forum's success was followed by the inscription of Chiayi's 107-year old Alishan Forest Railway and Railway Cultural Landscape as

Taiwan's 'Important Cultural Landscape'. Alishan is the first site in Taiwan to be decorated with this tag.

The Symposium of one and a half days packed in case studies from across the world and managed to draw attention to the special status of Mountain Railways within railway heritage. Five keynote addresses covered a broad range of issues pertaining to the subject. Prof. Chih-Wen Hung introduced the audience to unique position of Chiayi as an industrial railway city supported by forestry and sugar industry followed by oil, chemical and agriculture. This was well contextualised in the larger railway heritage of Taiwan by Prof. Jun-Ming Huang. Paul Mahoney's keynote address put forth an argument for considering Alishan a landscape of outstanding universal value. Hasti Tarekat, Founder Heritage Hands-on, spoke about how the railways consolidated the vast and difficult terrain of the Indonesian archipelago. A constellation of UNESCO World Heritage sites from India, the mountain railways of Darjeeling, Nilgiri and Kalka-Simla, presented an impressive array of achievements as well as social, environmental and technical challenges of staying in operation successfully. Kyoichi Oda, president of Asia-Pacific Railways and Tourism Organization, spoke about the tourism potential of variety of railway heritage sites in Asia such as heritage rolling stocks operating on railway and tramway lines of national or local private railways and tramways, railway museums etc. Puffing Billy Railways was the best represented site with sev-

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View of the last station of Alishan Forest Railway. All photo credits: ANIH

eral participants. Timothy North, Chair of Emerald Tourist Railway Board and Robert McUtchen, Director Puffing Billy Preservation Society (PBRs) - himself a volunteer for over five decades - and spoke about crucial role of volunteers in keeping the site alive and relevant. Prof. Jongsang Sung, of Seoul National University shared examples of reuse how the Korean society is recognising historic railways as a cultural resource.

The Symposium had a very engaged audience despite sometimes three-way simultaneous translation being undertaken. The panel discussions were lively and the cross-cultural sharing of experience was found to be very useful to all. The symposium was followed by an excursion to the Alishan Forest Railways, the highest narrow gauge line in Asia (at 762 mm and 2,216 m) Alishān in Hindustani means 'spectacular' and that best describes the landscape. I wonder if the shared use of the word is a coincidence or a cultural connect of some sort.

In drawing together the diverse range of sites, ANIH put together an excellent resource for all those engaged in the conservation of railways heritage. It reinforced ANIH's commitment towards the spirit of Taipei Declaration of 2012 and its own vision of 'Multilateral Communication', 'Information Sharing' and 'Transnational Collaboration'. ANIH convened the 2nd International Preparatory Meeting where the proposal of hosting the 3rd Forum at the Coal Mining town of Sawahlunto, Indonesia was tabled.

The Forum was followed up swiftly with the publication of the 2nd **ANIH Bulletin** with focus on Railway Heritage. Detailed reports on many of the lectures mentioned above can also be found here.

CONFERENCE REPORTS



Pozo Soton colliery, Asturias.

GEOGRAPHIES, GEOMETRIES AND EMPLOYMENT, 21ST CONFERENCE OF INCUNA, SEPTEMBER 2019, GIJON, ASTURIAS, SPAIN

Dr Miles Oglethorpe, TICCIIH President

Up until this year, I had always been thwarted in my attempts to attend the annual INCUNA/TICCIIH España conferences in Asturias, despite several generous invitations many reports of the high quality of the events. However, 2019 turned out to be different, and this time I was not only able to come, but I was also doing so as President of TICCIIH, which made it extra special. So, it's good to be able to report that it was not a disappointing experience - it

was a wonderful few days in a region of Spain that is rich in industrial heritage. It was also exceptional because of the high quality of the papers, the excellent venue in the heart of Gijon (a beautiful city), and the delegates themselves who travelled in great numbers from all of the world. Needless to say, I made a lot of new contacts and friends. This process was greatly assisted by Margaret Hart Robertson who, in addition to delivering her own paper, deployed her professional translation skills to great effect throughout the programme and during the field excursions.

Expertly overseen by INCUNA President, Miguel Alvarez Areces, the formal proceedings were augmented by outstanding contributions from Florence Hachez-Leroy (CILAC President), Knut Markhus, director of the Norwegian Museum of Hydro Power and Industry at Tyssedal, and Manuela Mattone from the Politécnico Torino in Italy, with excellent papers from delegates reporting from throughout Spain and Portugal, as well as fur-

CONFERENCE REPORTS

ther afield, including South America and Georgia (the real one in Europe!).

The central theme of the conference focused on 'Geographies, Geometries and Employment', which allowed it to embrace many strands of industrial heritage, and personally took me back to my own academic roots. In addition, the programme incorporated a film festival, a photographic exhibition and a major exhibition on UNESCO World Heritage sites called 'Tracks'.

As a coal mining historian, I and several of the overseas speakers were also treated to a special visit to the Asturias coalfield, which is in the throes of final closure and the last coal-producing area of Spain. We were especially honoured to be able to meet the president of the Hunosa Group, Gregorio Rabanal, whose state-owned company is responsible for managing the closure and rehabilitation of the coalfield. With this in mind, it was astonishing to see the extent of the remains of the industry, which include some very fine surface arrangements, such as Soton, San Luis and Fondon. In the case of the latter, we were impressed to see the work being done on the region's mining archives.

INCUNA conferences are well-known for their field excursions, and on this occasion we were not disappointed. A long day of visits commenced with a coastal iron-ore mining site at Llumeres before the buses headed west along the coast into Galicia, where the first target was the Fábrica de Cerámica de Sargadelos and its surrounding cultural landscape. This was followed by visit to the old phosphoric iron ore (Limonite) calcining kilns of Pontenova. The final leg of the journey involved re-entry into Asturias and a stroll through the village of Taramundi, best known for the manufacture of high-quality knives but also notable for its use of local slate.

This was an outstanding conference, and I hope to attend future events – I thoroughly recommend other TICCIIH members to do so too. One further point of note is the professionalism with which INCUNA has published its proceedings. It is good to know that in addition to engineering a tremendous conference, there is a published legacy for others to appreciate in the future.

OBITUARY

ASSOCIATE PROFESSOR ROBERT IAN JACK

By Dr Iain Stuart, TICCIIH Australia (incorporating contributions by Dr Wayne Johnston and Dr Siobhan Lavelle)

Ian Jack passed away on the 4th September 2019 aged 84. He was such an important figure in developing the practice of historical and industrial archaeology in Australia (as well as attempting to set up TICCIIH in Australia) his passing should not go unnoticed. A brief appreciation has been prepared that only touches on his rich career and achievements.

Born and educated in Scotland, Ian Jack obtained an MA from the University of Glasgow in 1957 and completed a PhD at the University of London. Ian Jack joined the University of Sydney in 1961. In a career at Sydney University that ultimately spanned 40 years, he became a senior lecturer in 1965 and was appointed associate professor in 1970. He served two consecutive terms as Dean of the Faculty of Arts, from 1974–77,



IAN JACK

and was Head of the department of History from 1979-1982 and from 1992-1995. After retiring, he became an honorary research associate in 2002.

Ian Jack taught Medieval History and had formative experience working in that field where interaction with archaeology and the community was common, and you can see the influence of that

OBITUARY

experience in the form of history and industrial archaeological work Ian Jack undertook in his career.

As a teacher Ian Jack trained many of the current professional practitioners of history, historical archaeology and heritage work in New South Wales. His influence as teacher and mentor on many generations of students, who later became his colleagues, cannot be overestimated. He conducted pioneering interdisciplinary courses teaching on Australian history and industrial archaeology subjects from the 1970s, including a pioneering Adult Education course on the colonial buildings and sites of the Hawkesbury-Nepean Valley.

During from the mid- to late-1960s and early 1970s, Ian Jack was instrumental, along with Judy Birmingham (archaeologist) and Denis Jeans (historical geographer) in the creation of the course in Historical Archaeology in the 1970s. In an article in 2006 Jack documented his key role as Dean of the faculty of Arts in the development of historical archaeology by facilitating the introduction of the first undergraduate subject in the area against considerable inspirational resistance.

The trio published *Australian Pioneer Technology: Sites and Relics* (1979) and *Industrial Archaeology in Australia* (1983). These works were reflective of the author's interests in industrial archaeology and historical landscapes as well as their intellectual roots in the approaches taken by local historians and the deserted medieval village archaeologists in the United Kingdom. It is a matter of regret for the progression of the field that the three authors did not ever cooperate again in this fashion.

Ian's interest was in industrial archaeology, a subject in which he published profusely. His first Australian research was on James King of the Irrawang pottery which supported the excavations on the site by Judy Birmingham. He researched and wrote about Chinese settlement in Australia, the archaeology and landscape of the Hawkesbury River region (west of Sydney) and the oil shale industry. His main areas of research were the industrial valley of Lithgow and later he focused on the Hawkesbury River valley and the Macquarie era towns.

With his then wife, Dr Adeen Cremin, the early iron industry of Australia was researched and well documented in Australia's Age of Iron. My contribution was as a public servant archaeologist ac-

tually knowing where the blast furnace at Lal Lal was and driving them there so they could document the remains of the works. For me this established an on-going professional relationship culminating in his effortless supervision of my Ph. D. thesis.

Ian Jack's expertise led to his appointment as member of the NSW Heritage Council. He served on the Council from 1990-1993, 1997-1999 (Alternate Member) and 2000 - till they stopped appointing experts to the Heritage Council. In his work for the Council Ian Jack also served on numerous sub-committees. With Dr Dennis Jeans, he was the joint author of the State Historical Guidelines and of the main text for the Regional Histories volume of the NSW Heritage Manual published in 1996.

Ian Jack was the longest serving President of the Royal Australian Historical Society, becoming a member in 1981. He was on the Council of the RAHS first in 1990-91 and subsequently served as a Councillor in 1999-2000, thence as Senior Vice-President 2000-2002 and President of the Royal Australian Historical Society from 2003-11.

He was a Senior Fellow at St Andrew's College at the University of Sydney. He moved into residence in St Andrew's upon appointment as the Wilson Fellow in 1979, was Senior Tutor from 1982 until 1988, became the Hunter Baillie Fellow in Oriental and Polynesian Languages in 1988, and held the Woodhouse Fellowship from 1992 until 1998. As a member of many College Council committees over thirty years his academic analysis and standards was valued and respected, and his thoughtful, meticulous, fair and rigorous argument was persuasive in the occasionally difficult Council context, and particularly in the seismic debates around the admission of women into St Andrew's and the departure of Principal Rev Dr Peter Cameron.

I think Ian Jack could be summarised as being enthusiastic and supportive of those he came in contact with, most remember, in particular, his kindness to fellow researchers and students, and his humour. In this era where history is professed by those in academic towers surrounded by pay walls and post-modern language, and where Australian historical archaeology is no longer taught at any of the four universities in Sydney, Ian Jack will be sorely missed.

OBITUARY

DR JIM ARNOLD, DIRECTOR OF NEW LANARK CONSERVATION TRUST

By Mark Watson, Historic Environment Scotland

Jim Arnold, who will be forever associated with the Scottish paternalist mill village New Lanark, died on 19 February aged 73. He was a member of the Utopian Society.

Jim Arnold outlasted even Robert Owen's service at New Lanark. He was Director of New Lanark Conservation Trust for 35 years, whereas Owen was only to direct New Lanark for 25 years. During that time Jim oversaw the 'revivification' of the village as a standard bearer for regeneration of industrial and social heritage. Among many highlights, UNESCO world heritage listing was won in 2001 after an initial push by Jim in 1986 and a second nomination in 2000, when a letter-writing campaign had mysteriously propelled New Lanark to the front of the queue in the UK tentative list!

Jim described his arrival in 1974 as a 'newly appointed naïve and young Village Manager' in which housing refurbishment was first priority for the New Lanark Association. His work experience before then had been in the motor industry with Ford (notably the new Capri, and he retained a fondness for cars), and in teaching.

In New Lanark, then in a terrible state, he harnessed government labour and land reclamation grants that were then available. The creation at that time of independent industrial attractions relied on creative use of streams of government and EU funding that were much more substantial than those dedicated to heritage, although Historic Scotland and Lottery funds were later to play important roles.

Jim drove forward acquisition of the mills from a scrap metal extractions company in 1983, after a collapse of the roof in the School. With much floor space to fill, Jim saw through an ambitious tourist route. The Annie McLeod experience was adapted from a ski tow, and he installed a waterwheel and a steam engine that approximated to what had been there. Following a timely visit with the Scottish Industrial Heritage Society to Selkirk, he also acquired enough spinning machinery to set up a subsidiary busi-



JIM ARNOLD

ness producing woollen knitting yarn, as cotton would have not been economic, and this thrives today. New Lanark was never to be described as a museum.

Another branch of the operation was to be the New Lanark Mill Hotel, along with conference and leisure suites. The TICCIH 2000 congress stayed there during the Scottish tour. This was a training hotel in collaboration with a local college, so it too had a social purpose. This came about against Jim's initial judgement that restoring three missing storeys to Mill I (removed in 1946) would simply add to the challenge of empty space. But Historic Scotland would not fund half measures and stuck to its guns, and on that rare occasion Jim graciously gave way, and made a good job of it.

Jim had a good relationship with his trustees and a succession of able chairs. His combats with officialdom, such as those representing the funding agencies, were always good-humoured, in the certain knowledge that New Lanark would outlast them all. New Lanark is on even keel, despite the alarms Jim would occasionally ring, and that is his monument.

Jim retired in 2010. He suffered in recent years from heart problems and died suddenly at home in New Lanark on 19 February 2019. He is survived by his sisters Linda and Irene, his niece Samantha, nephew James, and his partner Lorna Davidson. There was a celebration of his life on 27 June in Robert Owen's Institution for the Formation of Character in New Lanark.

COMING SOON

2019

GUATEMALA

IX COLOQUIO LATINOAMERICANO DE PATRIMONIO INDUSTRIAL.

4 - 7 November, Ciudad de La Antigua Guatemala

UK

INVESTIGATING INDUSTRIAL PASTS AND LEGACIES, UCL TAG 2019, UCL TAG 2019, UCL Institute of Archaeology

16-18 December, UCL Institute of Archaeology, London

2020

GERMANY

CITIES AND HISTORIC TEXTILE COMPLEXES: Typology, Good Practice, and Global Perspectives for Conservation

23-25 April, TICCIIH Textiles Section, Humboldt Universität, Berlin

BRAZIL

5th INTERNATIONAL CONGRESS OF RAILWAY HISTORY AND HERITAGE (Railways Section TICCIIH meeting), and the 4th Journey of Young Researchers in Railway History and Heritage. Portuguese, Spanish and English. CfP.

March 25-26 and 27, in Campinas, Sao Paulo

GERMANY

WORLD CONFERENCE OF PUBLIC HISTORY

18-22 August, Freie Universität Berlin.