Patrimoine de l'industrie / Industrial Patrimony

Professor Louis Bergeron, TICCIH Honorary President and Editor of Patrimoine de l'industrie

TICCIH Bulletin takes the opportunity of the third anniversary of the launch of TICCIH's journal Patrimoine de l'industrie / Industrial Patrimony to remind our members and readers of some facts and features.

The idea of editing such a periodical arose from many discussions in the nineties upon the necessity for TICCIH to become more visible also through publications. It is produced at the Ecomusée de la Communauté Urbaine Le Creusot-Montceau-les-Mines under myself and Maria Teresa Pontois (membership secretary), for TICCIH and in partnership with ICOMOS. It appears twice a year (June and December) in the shape of an A4 format comprising 112 pages and about 60 pictures in black and white, except for the cover page which is now in colour.

The Journal appeared first at the beginning of Summer 1999, and issue n°6 has been mailed just before Christmas 2001. This is until now (and taking for granted that some journals of mainly national interest will include from time to time some stuff about foreign topics) the only review dealing on a truly international and world-wide level with all kinds of problems concerning the knowledge, the defence and the promotion of industrial heritage and the whole range of its values - a common cultural concern to any countries which shared the long-term movement of technological progress and intensified industrialisation. Contributions are published in five languages (English, French, Italian, Spanish, German).

The contents usually offer:

- thematic studies related to the present problems of industrial heritage, or partial proceedings of scientific meetings (the columns are namely open to the results of the TICCIH sections meetings (papers from the textiles meeting in Barcelona last year appear in the current issue);

- a documentation on experiences which are taking place in industrial and technical museums and ecomuseums;

- monographs dedicated to monuments, sites or landscapes still more or less ignored in any part of the world (a voice entitled: “Knowing the world industrial heritage”);

- historical files presented according to a branch plan and typology (under the voice: “Atlas of the World Industrial Heritage”);

- reviews of specialised books and journals appearing in the field;

- calls for the protection of endangered industrial monuments, sites or landscapes.

The next issue (subject to confirmation), n° 7, June 2002, is a thematic one on industrial, technical and architectural heritage in the great harbours of the XIXth-XXth centuries: It will include

Sir Neil COSSONS : What is left of the technical and industrial heritage in London harbour?

Dominique FERRIOT : Marseilles's harbour between heritage preservation and great redevelopment plans.

Bernard ANDRE : L'Arsenal de la Marine française à Brest.

Dirk J. PETERS : Industrial heritage in the harbour of Hamburg.

Andis CINIS and Andris BIEDRINS : The naval base in Karaosta (Riga, Latvia)

Francesco CALZOLAIO : Il patrimonio industriale a Porto Marghera

Nikos BELAVILAS : Industrial heritage in the harbour of Peiraion.

José Manuel LOPES CORDEIRO : Industrial heritage in the harbour of Porto.

Mark LONDON : La revitalisation de la zone industrielle du canal de Lachine (Montréal)
And Industrial heritage in the harbour of Rouen; Rehabilitating industrial heritage in the harbour of Copenhagen; Industrial heritage in the harbour of Rotterdam.

TICCIH Bulletin and Industrial Patrimony: the permanent information and exchange of experiences you need on industrial heritage all around the world

TICCIH News

Most of TICCIH’s Trustees were able to get to Barcelona in November for the annual meeting of the Board, along with Dr Patrick Martin, recently elected National Representative by the United States’ SIA, and Professor Strarikov, who is organising the next TICCIH congress in the Ukraine. The title of the congress will be ‘The transformation of old industrial centres and the role of industrial heritage’. It will start with a brief visit to Moscow, to see the city and help make political leaders there more aware of the importance of Russia’s industrial heritage, and then move for the main sessions to the spectacular industrial archaeology of the Ukraine, a short flight cross the Urals. One of the interesting proposals agreed at the meeting was to prepare an international charter of industrial heritage to be presented in Moscow as an international statement of TICCIH’s principles. It was decided to start work on a framework document that can be circulated for consultation during the next year, and anyone interested in commenting or contributing to this project should contact the Editor.

The Board also accepted the report of the TICCIH collieries group, co-ordinated by Dr Stephen Hughes, of criteria that ICOMOS can use in assessing mining sites for World Heritage list. The report is the fourth such definitive thematic study undertaken through TICCIH. The text is posted on the web page. It will be presented at the Mining Section conference in Barcelona in 11-14 April, 2001 (see page 8).

To make it easier to remember to renew your TICCIH subscription, the Board decided that membership will in future run for one calendar year starting in January. In this way TICCIH won’t have to send reminders to everyone throughout the year and can instead make a general call for payment of the annual subscription in the first Bulletin of the New Year. So please send the appropriate payment now to Maria-Teresa Maiullari, the Membership Secretary, for the extremely moderate amount of fifteen UK pounds, preferably by faxing your credit card details to her, at the address is to the left of this notice. The Secretary is looking at the possibility of accepting Euros but for now the payment has to be made in sterling.

The conference proceedings of the London congress have now been published and were sent to congress participants at the end of last year - the shortest publishing time in TICCIH’s history. ‘From Industrial Revolution to Consumer Revolution: international perspectives on the archaeology of industrialisation’ has been edited by Marilyn Palmer and Peter Neaverson and published by the Association for Industrial Archaeology with Maney Publishing. The Transactions include twelve papers from the plenary sessions and one additional workshop paper by Professor Michael Mende. There are summaries both in English and French but all except J-F Belhoste’s are in English. The only thing missing form the excellent production is some mention of TICCIH itself. The publication is dedicated to Michael Stratton and his friend and frequent collaborator Barrie Trinder has written an appreciation of Michael’s life and work.

New National Representatives

TICCIH is now represented in Indonesia by Dr Krisprantono, whose article on the conservation of the sugar mills of Java appeared in the last Bulletin. And Mme. Françoise Busine, president of TICCIH Belgium, has been chosen as their new Representative. The contact details of all the National Representatives can be found on the web site.

Report

An invitation to the deck of the “Nadbor”

Prof. Stanislaw Januszewski, TICCIH Polish Committee

In July 1998, the Study and Documentation of Technical Monuments Office of Poland took into the usage from its owner - ODRATRANS Share Company - the historical steam tug “Nadbór”. Together with the armature and the founders of the Foundation of Open Museum of Technology and the General Conservator of Monuments it undertook the reconstruction and revalorisation in order to use the tug as:

Laboratory Boat - the workroom for Study and Documentation of Technical Monuments Office. The office registers technical monuments, organises historical and conservatory studies, interprets the industrial heritage, has its own computer database for over 8,000 monuments of industry and technology and the collection of 50,000 photos, about 10,000 drawings, employs 4 full-time workers and 6 co-workers. The workroom is situated in the tug superstructure and under the deck in the stem part, in the rooms being formerly used as the captain’s, steersman’s and mechanic’s rooms, the sitting room, the kitchen, toilet and the shower room.

School Boat - Foundation of Open Museum of Technology Club, the lecture and projection hall etc. - situated in the stern room adapted for this purpose. Since 1999, the lectures and seminars on “History of Technology” for the students and postgraduates (160 people in 10 groups) of the Technical University of Wroclaw have been delivered here. The tug is also a didactic base for the Postgraduate Study of Industrial Archaeology “Museums and Protection of Technical Monuments”.

TICCIH BULLETIN

No. 15 • 2002
Museum Boat – the steering room, engine room and boiler room together with their genuine equipment is open to the public. This is the only one steam boat in Poland nowadays that is so close to its original condition, with the genuine engine (250 HP), boiler room, steering gear, steering room, rich equipment and a hull in a good condition.

The idea is that it should be the students from the Students’ Science Association “Protection of Technical Monuments” (having its seat in the tug) and the students of the course “History of Technology” and the Postgraduate Study of Industrial Archaeology who will do most of the conservatory work. It is because of the didactic and educational values of such work. The students and postgraduates of the Technical University of Wroclaw work on the computer multimedia programmes whose forms and ideas are adjusted to the needs of making the tug and other monuments of technology in Wroclaw and in Poland open to the public.

The reconstruction of the tug is connected with the programme of conservation works of the Odra River embankments in the part of the top outer harbour of the monumental Szczyniki Lock (1916), where we want to exhibit several technical staff and equipment connected with sailing and using the locks, weirs, water-power stations etc. In December 2001, we are completing the moorings for ”Nadbór” and lightening the embankment.

Along the Odra River and the Elbe and Rhine Canals “Nadbór” will sail to Holland with the help of the pushing boat – “Tur”. The cruise will take place from the 11th of May to the 26th of June 2002 and its itinerary is the same the way she did in the summer 1949. She was one of the 23 tugs built in 1949 in Holland for the Odra River.

Eusebio Casanelles i Rahola, the president of TICCIH is the honourable patron of the cruise. “Nadbór’s” motto will be “Europe over the rivers – integration – common heritage of technical culture”. On the deck and on the embankments, in the harbours and culture clubs we will organise a happening combined of fests, exhibitions, multimedia projections, meetings, press conferences, artistic, conservatories and scientific conferences to promote the technical heritage of Poland and Europe.

The itinerary is divided into 10 to 12 parts. The voluntary workers and the international crew will be changed. Their tasks will be to present their own regions, heritage, development programmes, offers of co-operation in the fields of industrial tourism and economy, ecology, science and technology.

The cruise is the chance for presenting the heritage that joins. The programme is open and everyone who wants can participate in it. We invite.

Enrolments: Prof. Stanislaw Januszewski, Foundation of Open Museum of Technology

“Nadbóra” Steam Tug, Wroclaw, Wybrzeże Wyspiańskiego, Poland – outer harbour of the “Szczyniki” lock

tel. 0601-755-138; fax. 071/363-28-78; e-mail: nadbor@pwr.wroc.pl Pre-programme of the cruise – www.pwr.wroc.pl/nadbor/index.html

Worldwide

Industrial heritage recognised by UNESCO

Several industrial sites were inscribed in the UNESCO list at the last meeting of the World Heritage committee.

- Historic Centre of the Town of Goiás BRAZIL (C ii, iv) ‘The urban layout is an example of an organic mining town, adapted to the conditions of the site.’
- Zollverein Coal Mine Industrial Complex (C ii, iii) GERMANY ‘…constitutes remarkable material evidence of the evolution and decline of the coal industry over the past 150 years.’
- The Mining Area of the Great Copper Mountain in Falun SWEDEN (C ii, iii, v) ‘…provides a vivid picture of what was for centuries one of the world’s most important mining areas.’
- Derwent Valley Mills (C ii, iv) UNITED KINGDOM ‘…a series of eighteenth- and nineteenth-century cotton mills and an industrial landscape of high historical and technological significance.’
- Saltaire (C ii, iv) UNITED KINGDOM ‘..a complete and well-preserved industrial village of the second half of the nineteenth century.’
- New Lanark (C ii, iv, vi) UNITED KINGDOM ‘..where a model industrial society was created in the early nineteenth century by the philanthropist and utopian idealist Robert Owen.’

http://www.unesco.org/whc/toc/mainf11.htm

New Lanark was officially inscribed on UNESCO’s World Heritage List in December 2001. The village was founded in 1785 by David Dale as a completely new industrial settlement. Cotton-spinning mills, powered by water from the River Clyde, and housing for the workforce were built from local sandstone. By 1820, the population of the village was around 2,500, and it was at that time the largest cotton-manufacturing centre in the country. Under the enlightened management of David Dale’s son-in-law, Robert Owen, from 1800 till 1825, New Lanark became famous as a model community. Owen set about improving and expanding the business, and he used the profits to finance a series of radical social and
educational reforms designed to improve the quality of life for his work-force.

The cotton-mills continued in production until 1968, powered throughout by the river. The village, founded during the early period of the Industrial Revolution, survived with few physical changes; since 1974 it has been in the care of an independent charity, New Lanark Conservation Trust, which is dedicated to its restoration and development as a sustainable working community. The village still has a resident population of about 180 people who live in the beautifully restored Georgian buildings. New Lanark, which enjoys a dramatic riverside location, is a popular tourist destination, and the former industrial buildings now provide award-winning facilities for visitors including exhibitions, shops, catering, and even an hotel and self-catering accommodation, as well as premises for a variety of commercial enterprises.

It is surprising to many people that a site of recognised international cultural significance should be in the care of a small independent charity, rather than being the direct responsibility of the State. It is not unique in this respect, and it may be a reflection of the fact that it has taken a long time for industrial sites to be recognised as important elements of our cultural heritage. Whether this position can continue now that New Lanark is a designated World Heritage Site is a matter for review by the authorities concerned. The industrial heritage is less picturesque, perhaps, than World Heritage Sites like the Taj Mahal or the great cathedrals, but is no less relevant to the lives of millions of ordinary people. The inscription of New Lanark and other industrial sites is a welcome recognition that the Industrial Revolution genuinely and irrevocably changed our society.

New Lanark was born in an era of enterprise, and in Robert Owen that spirit of enterprise was allied to a vision of a better and fairer society for the working people who created the wealth and prosperity of the new industrial age. Above all it is essential that this unique Scottish settlement is safeguarded to inspire and delight future generations.

New Lanark Trust  www.newlanark.org    trust@newlanark.org

Worldwide

Two railway conferences in Britain

John Crompton

September saw two well-attended conferences in the north of England covering two different, in period and philosophical terms, aspects of railway heritage.

The International Early Railways Conference provided a forum for sharing and discussing research on railways earlier than 1840, and was held at the Museum of Science and Industry in Manchester (MSIM) from 6th - 9th September, attracting some 80 delegates. This was the second in a planned series, the first conference having been held at Durham in 1998.

More than twenty papers tapped a rich vein of scholarship including studies of early locomotives, the first railways in Britain, Italy, Russia and Canada, technical aspects of early railway engineering and the beginnings of railway preservation. Outstanding for its combination of documentary and artefact examination, for its adherence to the principles of archaeological recording and for the quality and detail of its computer-generated drawings was a presentation by Michael Bailey and John Glitheroe on “Rocket”, victor of the 1829 Rainhill locomotive trials and now preserved by the National Museum of Science and Industry.

Lively presentations and debate continued into the late hours, after the delegates had the opportunity to explore the rich archaeology of the 1830 terminus of the Liverpool & Manchester Railway which is now home to MSIM. They were able to ride behind the “Planet” replica, admire the almost complete replica of the mysterious “Elephant” locomotive commissioned by Beamish Museum, and to tour historic sites along the world’s first ‘modern’ intercity railway.

Two weeks later, “Slow Train Coming - Heritage Railways in the 21st century” held at the National Railway Museum in York and organised by the Institute of Railway Studies and the Heritage Railways Association, attracted delegates from many parts of the world. The conference provided a splendid opportunity to learn about the achievements of, and challenges to, heritage railways across the world with separate seminars devoted to southern Europe, Germany, United Kingdom, North America, Japan and Australia. These sessions provided a feast of information on methods and problems, so many of which are common to preserved railways everywhere. The sustainability of heritage railways was addressed in a session on management and economics which drew on the accumulated wisdom of operations in the UK.

The National Railway Museum is part of the UK’s National Museum of Science and Industry, and has recently been extended so that visitors can browse the varied and labelled collections in store in the ‘Warehouse’, operate model signalling systems and track the trains on the East Coast main
railway, and watch the restoration of locomotives and railway vehicles. The museum provided an excellent venue for a rich exchange of views and experience which, it is hoped, will encourage and assist heritage railways in many parts of the world.

A third Early Railways conference is already planned for 2004 in York, and meanwhile selected papers from the First Early Railways Conference at Durham in 1998 have been published in a very attractive format by the Newcomen Society, available from the Society, The Science Museum, London SW7 2DD at £35.90 including postage.

Worldwide

GERMANY

Gas compressors, Dortmund

Hans Kania

Five gas compressors, each driven by its own steam engine, are preserved in the Kokerei Hansa in the Ruhr. Built in 1928, they were part of a gigantic investment programme of the local steel company Vereinigte Stahlwerke AG. In order to adjust the balance between coal and steel, a number of big cokeries were built, each of them supplied with coal from several surrounding mines. In order not to waste any of the energy enclosed in the coal, big efforts were made to sell the gas of the coke ovens to public consumers.

The steel company combined the cokeries and their blast furnaces with big tubes running through the urban landscape, transporting the meaner and cheaper gas of the blast furnaces to the cokeries. To use this gas helped the cokery to get more of its own gas from the coke ovens to sell profitably.

The five gas compressors of Hansa compressed 140,000 m³/h to 9 atü pressure. The gas was led to a gasometer in the grounds of the cokery and then delivered through a system of tubes to private and industrial consumers.

The building and the compressors are protected and waiting to be restored or combined with a new use. They belong to the Stiftung Industriedenkmalpflege und Geschichtskultur which has its headquarter in the neighbouring building.

EUROPE

Some information about the “European Agency”

Following the discussions which took place on the occasion of two Board meetings (London, August 2000 and Terrassa, November 2001), and the consultation of the solicitors in charge of advising TICCIH as a Charity by care of Stuart B. Smith, TICCIH General Secretary, Maria Teresa Maiullari Pontois, TICCIH Membership Secretary, would like to inform our members and readers of the steps she will be taking very soon to constitute that Agency, and of the kind of activities she already developed since the end of 2000 in a foreshadowing phase, and will be developing in the year 2002.

The “European Agency” will take the legal shape of an E.G.E.I. (European Group of Economic Interest), a kind of status under European legislation and regulations which fits as well to modest initiatives as to heavily capitalised companies. It will be a private enterprise financially completely independent from TICCIH, not even including TICCIH in its name (following TICCIH’ solicitors request), so that TICCIH as a Charity under British law shall not be responsible at any rate of that new structure, nor of its financial constitution and current management. While a clear distinction – legal, administrative and financial – will be established between TICCIH and the European Agency, however TICCIH members may become associated members of the E.G.E.I.

The creation of the Agency is aiming to the service and reinforcement of our International Committee and is intended to work with the Committee, with TICCIH members and in their interests. Within a short delay an agreement will be negotiated between TICCIH and the European Agency in order to define precisely the terms of that collaboration.

The Agency’s general purposes will be:

To create a permanent relationship between TICCIH and the European or international institutions (European Commission, Council of Europe, UNESCO…)

based on a formal or informal participation of TICCIH in the cultural programmes of those institutions concerning industrial heritage;

And namely to create a basis of collaboration in the field of training, management and communication in industrial heritage matters, with a network putting together the different competencies developed in the staff group of the European Agency;

To help any national committees, sections, group or individual members within TICCIH to develop their proper projects
(research, exhibitions, publications...) in a multilateral and international perspective, and to manage these projects in the course of their completion – especially if it is about European programmes.

The best illustration of the already performed activity consists in the privileged link which has been established between TICCIH and the Council of Europe over the past fifteen months. Maria Teresa Maiullari Pontois has been entrusted by the E.F.H.S. (European Foundation for Heritage Skills, under the Patronage of the Council of Europe; Daniel Thérond, Director) to launch a virtual forum (restricted access, but primarily open to TICCIH members, enterprises, universities and administrations) dedicated to the present problems of industrial heritage (January-July 2001 and from December 2001 through the year 2002).

That co-operation has henceforth included within the execution of the HEREIN programme of the European Commission. In the course of the year 2002 the results of the 2001 activities will be brought to a larger audience by means of a series of publications: on the web, through printed editorial material (TICCIH Journal) and by producing a CD-Rom.

Nonetheless, the main way of activating the Agency will be to call for propositions arising from TICCIH members themselves. The Agency has its proper business plan – but its business plan will be, too, made out of TICCIH members own propositions. Do you have an idea about the re-use of an ancient plant, but no idea about possible partners or European programmes involved? Then, please send your questions and requests to Maria Teresa Maiullari Pontois: bergeron@msh-paris.fr

Publications

*Claude-Nicolas Ledoux and Russian Architecture, Catalogue of Exhibition*, 2001, Ekaterinburg, Russia. Ural State Academy of Architecture and Arts, Ekaterinburg, 620075, K Liebnicht Str. 23, T: +7 3432 715681, abaranbanov@ural.online.ru Text in French, Russian and English.

The catalogue of an itinerant exhibition that connects Ledoux’s neo-classical designs with much less well-known but equally striking industrial architecture and town planning in Russia. Includes models and pictures of some of the large planned military industrial complexes built by the 18th and 19th century Tsarist state.

Events

**TICCIH conferences**

**GERMANY**

Third meeting of the TICCIH Paper Section and ‘The Watermark Route’ project

26-28 April, 2001, Bergisch Gladbach

Hosted by the Papiermühle Alte Dombach paper museum, part of the Reinisches Industriemuseum network, the meeting will continue the series of encounters between paper museums and people interested in the conservation of the paper industry. The theme of the meeting will be the relationship between paper museums and the paper industry, in the past and also the future. Visits to historic paper mills in the Cologne area will be an important part of the meeting. Contact Sabine Schachtner, Papiermühle Alte Dombach, D-51465 Bergisch Gladbach, Germany, +49 2202 9366823. s.schachtner@lvr.de www.mmp-capellades.net/watermarkroute

**SPAIN**

International meeting of the TICCIH Mining Section

11, 12, 13, 14 April 2002, Terrassa, Barcelona; optional day of extra visits on the 11 April.

Hosted by the Museu de la Ciència i de la Tècnica de Catalunya, in association with the Trevithick Trust

Following of the format of the Textile section conference last year, the first full meeting of the Mining Section of TICCIH will combine papers on the conservation and interpretation of historic mining sites with a full programme of visits. The proposals by TICCIH for international coal mines sites for ICONOMOS will be publicly presented and discussed. The meeting will also establish the basis for its future work, research and study. Registration will be 90 Euros for members and 100 Euros for non-members, and will include reception and meals for the full days of the conference.

All the information necessary to register is on the TICCIH web page, including booking accommodation. Places are limited so people interested in attending should contact the address below.

TICCIH Mining Section meeting, Museu de la Tècnica i de la Ciència de Catalunya, Rambla d’Egara 270, 08221 Terrassa, Spain; T: +34 93 736 8966 F: +34 93 736 8960 TICCIH@correo.gencat.es www.museu.mnactec.com/TICCIH/minemeet.htm
RUSSIA

TICCIH XII International Congress: ‘The transformation of old industrial centres and the role of industrial heritage.’

10-14 July, 2003 in Moscow, and 14-18 July post-congress tour to Nizhny Tagil in the Urals

The next full TICCIH Conference will be an opportunity to see some of the most interesting as well as spectacular industrial heritage sites in the world. Papers are invited on the above theme. The official language will be English, but papers also in French and Russian, with simultaneous translation of plenary sessions. Study visits in Moscow and cultural programme include the Kremlin, the Bolshoi Theatre, and the Moscow river. Post-congress tour of the famous mining and metallurgical sites in the Urals, including a helicopter trip over the 1882 Ust-Borovsky salt works. Details will be sent out in early 2002. Eugene Logunov, Institute of Material Culture, PO Box 65, Ekaterinburg, B-109, Russia 620109, tel: +7 3432 297874 fax: +7 3432 297731 logunov@online.ural.ru

Other events

GERMANY

Industrial structures: conservation, change of use, refurbishment

6-9 March, 2002, Braunschweig, Germany

Organised by the Technical University of Braunschweig and the Scientific-Technical Study Group for Building Conservation and the Preservation of Monuments (WTA), it will bring together theory and practice for an exchange of experience in the conservation, restoration and refurbishment of industrial structures. Project reports on industrial buildings that have been restored and/or put to a new use, as well as guided tours of projects near Braunschweig.

Monika Denzel, Reisebüro Schmidt, Stadmarkt 17, D-38300 Wolfenbuttel, Germany, T: +49 53 31884251 F: +49 53 31884111, ib2002@der-schmidt.de www.ib2002.tu-bs.de

US

SIA annual conference, Saturday, June 8, 2002 in Brooklyn, NY

Presentations on all topics related to industrial archeology. The meeting coincides with the 150th anniversary of the American Society of Civil Engineers (ASCE), thus providing an excellent opportunity to explore and celebrate the region’s outstanding civil engineering achievements. Call for papers: send paper copies before February 1, 2002 to: Mary E. McCahon, 332 E. Union St, Burlington, NJ 08016; (215)752-2206; mmccahon@lichtensteinengineers.com

SPAIN

Technology, Cultural Interchange and Globalization

29th Symposium of ICOHTEC, The International Committee for the History of Technology

June 24 - 29, 2002, Granada, Spain.

PROGRAM SUBMISSIONS: James C. Williams, Chair, ICOHTEC Program Committee, techjunc@pacbell.net History Department, De Anza College, 21250 Stevens Creek Boulevard, Cupertino CA 95014 USA T: 650-960-8193 www.icohtec.org

GREAT BRITAIN

AIA Annual Conference In Edinburgh


FRANCE

World Heritage - Industrial Heritage


See the web site http://patrimoine.saline.free.fr Franck Gauthé, Institut Claude-Nicolas Ledoux, Saline Royale, F-25610 Arc-et Senans, tel: +33 3 8154 4536 fax: +33 3 8157 5929, arch.saline@wanadoo.fr