

# CHS CONSTRUCTION HISTORY SOCIETY Newsletter

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## EDITOR'S NOTE

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## SECOND INTERNATIONAL CONGRESS ON CONSTRUCTION HISTORY, QUEENS' COLLEGE 29<sup>TH</sup> MARCH - 2<sup>ND</sup> APRIL 2006 (MALCOLM DUNKELD)



*Queens' College in springtime*

The Second International Congress on Construction History was held at Queens' College, Cambridge University between the 29<sup>th</sup> March to 2<sup>nd</sup> April 2006. This is the largest event the CHS has ever organised and, judging by the comments made by delegates to the organisers at the end of the Congress, it has proved to be an outstanding success. The event was inspired by the First International Congress held in Madrid in January 2003. Anybody who attended that Congress (which was brilliantly organised by Professor Santiago Huerta) could not but have been inspired by the lively atmosphere and range of papers presented that touched on many different facets of construction history. That was the first time to my knowledge that so many construction historians had come from so many different countries to share their ideas and discuss the field of construction history.

On the last day of the Madrid Congress the President gave the farewell address and hinted that future international collaboration was in the offing. I believe there have been a number of attempts to subsequently form an International Society for construction historians.

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However, several years went by and no such society materialised and also there did not appear to be any discussion about holding further International Congresses. It was at this point that the Committee of the Construction History Society decided to try and recreate the wonderful experience of Madrid by setting up the Second International Congress. A Planning Committee (consisting of Bill Addis, James Campbell, Malcolm Dunkeld, Lawrence Hurst, Robert Law, Hentie Louw, Robert McWilliam, Christopher Powell, Stuart Tappin, Robert Thorne, Michael Tutton and David Yeomans) was set up to discuss the basic strategy for the Congress and from this the Organising Committee was selected and tasked with making the event real.

By the time the Congress opened on the 29<sup>th</sup> March over 260 delegates had registered from all the continents of the world, except Africa. The largest numbers of registrations were from the following countries: -

UK 50  
Spain 45  
Italy 42  
USA 27  
Germany 22  
France 13

Other countries represented included Australia, Belgium, Canada, Denmark, Finland, Holland, Ireland, Japan, Norway, Sri Lanka, Switzerland, Taiwan, Turkey, Ukraine and Venezuela. The forgoing shows the event to be truly international, although future Congresses need to think hard about attracting delegates from those countries not present, but with a great tradition of building (i.e. China, India, Russia and the Eastern European and African countries).

Upon registration delegates received a pack of useful information and, most important of all, the Proceedings containing all the papers delivered at the Congress. The 3-volume set of Proceedings was the subject of much mirth during the Congress, mainly due to the size of the document.



*The complete 3-volume set of the Proceedings*

Each volume weighs 2.8kg and is 65mm thick! The complete set weighs an incredible 8.4kg and contains all the 198 keynote lectures and papers delivered at the Congress. For this document to be ready in time for the Congress was a true testament to the efforts of the Editors: they were required to read and edit over 1.5 million words in less than 4 weeks (all while doing their normal jobs). The Editors were:-

Malcolm Dunkeld  
Dr. James Campbell  
Dr. Hentie Louw  
Michael Tutton  
Dr. Bill Addis  
Dr. Christopher Powell  
Robert Thorne

The Proceedings not only contain many interesting papers but are also beautifully illustrated and will be a treasure trove for anybody interested in construction history for years to come. A debt of gratitude is owed to Claudia Mark (a PhD student at Queens' College) who formatted the whole document ready for printing in a few weeks and the superb layout of the Proceedings is almost entirely down to her.

Despite the undoubted intellectual content of the Proceedings, many delegates were more concerned about getting such a huge document home without either paying excess baggage or straining their back!

The Congress was officially opened by Sir William McAlpine (Patron of the Construction History Society) who gave the welcome address in the main Fitzpatrick Hall. Sir William introduced the Congress in the following terms:-

'Ladies and Gentlemen,

It is a great pleasure for me personally - and on behalf of the Construction History Society - to welcome so many distinguished construction historians to this tremendous event, the Second International Congress on Construction History. I understand that many of you have travelled thousands of miles to participate in the Congress and I would like to wish everybody a very successful and interesting four days of discussion.

You may not be aware that I have a background in construction as the director of a well-known family construction firm in the United Kingdom. In the busy and pragmatic world of building it is very easy to forget that construction has a long past and has often been at the centre of human activity. When people go on holiday and visit the wonderful civilisations of the past -

Egypt, Rome, China, India, Mexico, Greece - it is the buildings and structures that these civilisations left behind that mostly remind people of the great achievements of these societies. And often what amazes people is not the architecture, but rather the size and technical sophistication of these works. In other words, how they were built.

Even today when a spectacular new building is unveiled or a bridge is built that spans an amazing distance or a dam is constructed with staggering amounts of concrete, people still express awe at the achievement. And perhaps what they are really impressed by is the power of construction to transform nature and even rival it in some way.

Construction is often associated with civilisation and lies at the heart of many societies understanding of human progress. For example, Vitruvius - at the beginning of his book on construction - states that the art of building is the third stage in the development of civilised life, after fire and the evolution of language. Not only did the art of building lead - in time - to the development of other arts and crafts, but its application provided the shelter and protection necessary for settled communities, giving it a fundamental role in the emergence of man from the "life of beasts and of the fields".

In the aftermath of war and destruction the great comforter and motivator for human beings to carry on is the possibility of renewal and development through building work. Assembling things that provide shelter in what can be a harsh and unrelenting world. All these things reveal the importance of construction to us and why it is worthwhile studying.

I have made a small contribution to this field by being the Patron of the Construction History Society. This Society was founded in London in 1983 and from the start has been dedicated to

understanding the history of the building process as distinct from the history of architecture. The Society publishes a learned journal and attempts to advance the field of construction history in various ways.

What has been interesting to me is to see the development of an international community of construction historians. Not only has construction history been of interest in my own country but also many other countries. It is probably fair to say that until recently historical writing associated with construction has been national in character, with Spanish, Italian, French, German, American and English scholars going their separate ways.

However, cheap international travel and transcontinental communications through e-mail have effectively abolished the boundaries between scholars of different nations and international conferences are held almost daily throughout the world. It is now the case that in the international marketplace of ideas, nobody can really afford the luxury of intellectual isolation.

With regard to construction history there have been numerous seminars and conferences that have attracted an international audience. It is probably fair to say that the international discussion on building history was given the biggest boost with the establishment of the First International Congress on Construction History held in Madrid in 2003. This event was organised by Professor Santiago Huerta and was a wonderful opportunity for colleagues in different countries to exchange ideas.

Today's event - the Second International Congress - attempts to build on the success of the Madrid Congress and invites delegates to broaden their knowledge of construction history. The Congress Organisers tell me they are particularly keen to widen the geographical horizons of construction historians with the presentation of papers that deal with building in nearly all the continents of the world. These are exciting times to be a construction historian with many new areas for research and fresh insights into the way human beings have approached building.

Construction history should not only be of interest to academics: in Britain - as in many other countries - millions of people work in construction as craftsmen, designers, managers, engineers, quarrymen, fabricators, labourers and so on. It is important that ordinary people have a knowledge and voice in the history of the industry in which they work. They also have a valuable insight into the world of building and I hope the Congress has attracted practitioners from all sorts of backgrounds who will share their knowledge and experience over the coming days. Academics are not the only ones qualified to talk about building history.

A good conference is one in which there is lively debate and argument - a discourse if you like - on the set theme. I hope this Congress challenges the beliefs of delegates and gives them many new insights into the theory and practice of construction history. Of course not everybody agrees what constitutes the core of construction history - should it have a mathematical and engineering base; should it have a social and economic core; or should technical issues dominate? Is it always in opposition to architectural history or should it attempt to reintegrate the stylistic treatment of buildings with the forces of production that brought such buildings into being? While these are questions worthy of debate, having too sectarian an approach is never a good idea for historians. Instead, being open to many influences and other disciplines leads to genuine debate on how we - throughout our time on this planet - have gone about building.

I would like to thank the Congress Organisers for all their hard work in setting up what I am sure will be a most stimulating and memorable event. And also Queens' College for allowing the Congress to be held in such beautiful surroundings. I hope the Congress will be an informative and enjoyable event for each and every one of you.

Thank you'

Following Sir William's welcome, the Congress began with an interesting Keynote Lecture by Andrew Saint titled '*Architect and Engineer: an Eternal Dualism?*' which explored the historic relationship and status between the designer and engineer. The lecture was based on a forthcoming book that Andrew is bringing out. Over the four days of the Congress 6 other Keynote Lectures were heard in the main Fitzpatrick Hall which all delegates were invited to attend. The lectures included:-

- Professor Antoine Picon (Construction history: between technological and cultural history)
- Professor Linda Clarke and Dr. Christine Wall (Omitted from history: women in the building trades)
- Prof. Javier Giron (Drawing and Construction Analysis: from Piranesi to Choisy)
- Valérie Nègre and Dr. Robert Carvais (The Conservatoire National des Arts et Métiers - preservation, dissemination and innovation of construction know-how (1794-1970))
- Dr. John Ochsendorf (Engineering Analysis for Construction History: Opportunities and Perils)
- Professor Paul Richens (Reconstructing the built past: the role of computer simulation)

The real 'meat' of the Congress was the 198 papers delivered by delegates throughout the Congress and which were heard in one of four rooms. Delegates were faced with the logistical problem of selecting those papers they were particularly interested in. Sessions were structured by the organising committee into themes (which included Gothic architecture and engineering, history of bridge engineering, vernacular architecture and conservation, stereotomy and stonework, history of steel and concrete, timber engineering, building archaeology, history of professional practice, history of services engineering, history of architecture, history of domes and barrel vaults, building economics and the history of site practice and the historiography of construction history), papers of outstanding interest and sessions termed 'pot pourri' where disparate papers were brought together to highlight interesting and different approaches in construction history.

Arranging the Congress into different sessions (typically lasting 11/2 hours) required 46 chairs of sessions! The Congress organising committee is very grateful to all those people who brilliantly chaired the various sessions.



Professor Simon Pepper chairing one of the sessions at the Cambridge Congress



*Dr. Bill Addis delivers his paper titled 'The Use of Scientific Calculations in Design Procedures for Heating, Ventilation, Daylighting and Acoustics from the Eighteenth Century to the mid-Twentieth Century' in the main Fitzpatrick Hall*



*The Congress also featured a book fair held in the beautiful Old Hall of Queens' College*



*One of the interesting exhibitions at the Congress. Ultan Cowley's multimedia presentation dealt with the experiences of the Irish building worker in Britain*



*Dr. David Yeomans chairing the session on the history of timber engineering*

Throughout the Congress various 'events' took place including - all day on Thursday - a book fair in the beautiful Old Hall of Queens' College. Various leading publishers of construction textbooks were present and the CHS had a stand selling past copies of Journals and conference proceedings.

Other events included an exhibition stand prepared by the Brick Development Association and located near the registration desk; a wonderful multimedia presentation by Ultan Cowley that showed in pictures and words the lives of the Irish immigrant worker who worked on many construction projects in Britain from the 19<sup>th</sup> century onwards. Those interested in a more detailed study of the Irish building worker were able to purchase Ultan's book titled '*The Men Who Built Britain: a History of the Irish Navy*'.



*Delegates boarding a Thames cruiser for the 'Bridges of London' tour as part of the visits programme during the Congress*

John Keenan of CIRCA provided a most interesting stand that showed the full range of the archive material kept at Stroud including product literature, journals, old construction textbooks, medals won for outstanding building products, company information etc. By attending the Congress John was hoping to attract financial support to expand the archive for public access.

Throughout the Congress a number of 'commercial' presentations were offered to delegates whereby companies connected to

construction but with an interest in construction history could talk about their products and services. These included a number of interesting presentations by the Brick Development Association on the history of brick and the range of machine and hand-made bricks currently available. Ventrolla discussed timber sash windows and Gersil Kay gave a beautifully illustrated talk on the benefits of fibre optic lighting.

Friday afternoon was set aside for visits. The organising committee thought long and hard about what visits would interest delegates bearing in mind their many different interests and from different geographical backgrounds. Six visits were offered to delegates:-

- The 'Bridges of London' tour which involved a spectacular 4-hour journey on a Thames river boat to view some historic bridges of London (and including the Millennium Bridge). The trip was led by Dr. Denis Smith of the Institution of Civil Engineers Panel for Historical Engineering Works
- The 'Roof and Upper Vault of King's College Chapel' tour. The tour allowed privileged permission to go above the vault and examine its upper surface and the roof structure as well as giving access to the roof itself and its unparalleled view over Cambridge. The tour guide was Professor John Ochsendorf, who lectures at MIT and is a structural engineer with particular research interest in Gothic structures
- 'Ely Cathedral' tour: this included the structure of the roof and lantern of the cathedral
- The 'Fletton Brickworks at Stewartby' tour. This tour represented one of the last chances to see the process of making fletton bricks since both the industry and this particular works are under threat of closure. The tour followed the complete process from digging of the clay from the quarry, through the sorting and grading, the moulding (wire cut) and finally a tour of the working Hoffman Kilns and the village built to house the workers. The tour guide was Michael Driver, Chief Executive of the Brick Development Association
- 'Stamford and Burghely House' tour, which included the state rooms of the house
- 'St Paul's Cathedral' led by Michael Stancliffe, surveyor to the fabric, together with Professor Andrew Saint and Dr. James Campbell all of whom contributed to a recent monograph on the cathedral

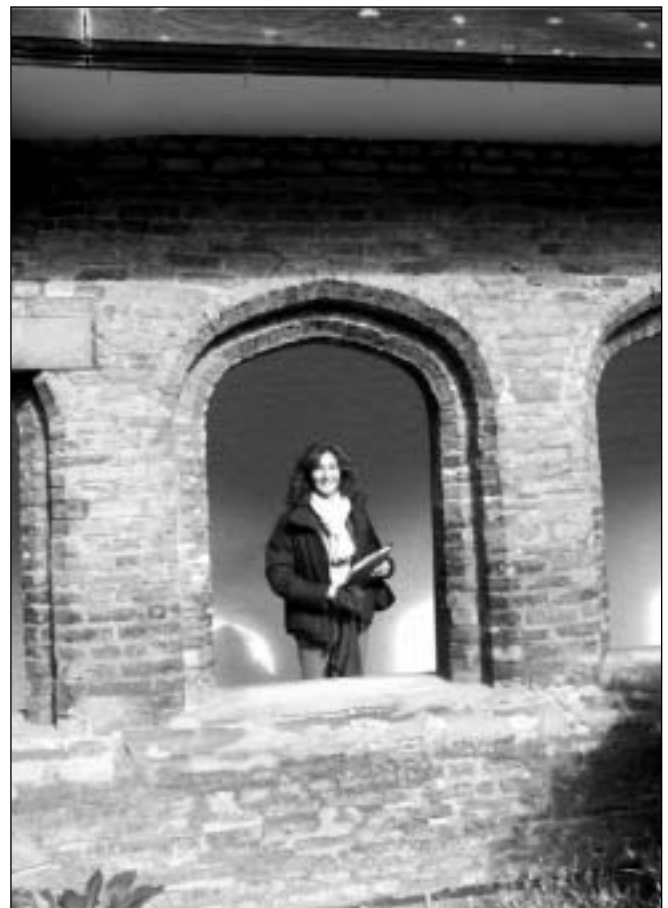
All the visits were well attended and were a great success, with delegates benefiting from expert knowledge and commentary.

The two social highlights of the Congress were the Scientific Committee dinner hosted by Professor Jacques Heyman on Thursday evening and the Congress banquet on Saturday evening. The organising committee are extremely thankful to Professor Heyman for agreeing to chair the Scientific Committee. Jacques has unhesitatingly supported the efforts of the organising committee to set up the Congress by giving good advice and on a small number of occasions acting as referee when a disagreement broke out. By agreeing to chair the Scientific Committee, Jacques also provided the Congress with intellectual validity.

In an after dinner speech Jacques thanked the efforts of the Scientific Committee: the Call for Papers resulted in over 400 abstracts being received, all of which had to be assessed by the Scientific Committee and the very best chosen for the Congress. All this work was done in less than 2 months. The organising committee were very impressed with the thoroughness and care with which the Scientific Committee did their work.



*Professor Linda Clarke and Jörn Janssen on the Mathematical Bridge at Queens' College*



*Professor Irene Giustina from the University of Brescia in Italy, who chaired one of the sessions at the CongressJames*



*James Campbell and Malcolm Dunkeld discussing the progress of the Congress*

The main social event of the Congress was a candle lit banquet in the main hall of Queens' College. The after dinner speeches were delivered by Malcolm Dunkeld (Chair of the Organising Committee) and Michael Driver (Chief Executive of the Brick Development Association). The banquet was preceded by a drinks reception at which delegates could relax and discuss all aspects of the Congress. Throughout the Congress the catering facilities offered by Queens' College were superb and many delegates commented on the quality of food and friendliness of the staff.



*Malcolm Dunkeld and Michael Driver at the Banquet High Table*

Saturday evening was rounded off with a wonderful musical session provided by Ultan Cowley and his musicians that was titled 'Songs from the sites - the music of the Navvies' which told the story - in songs - of the experiences of the Irish building worker in Britain. Ultan is the son of the late John Cowley, star of RTE's much loved TV series *The Riordans*.

The last day of the Congress - on Sunday, 2<sup>nd</sup> April - focused on the role and scope of construction history. There were a number of interesting papers on this theme in the main Fitzpatrick Hall, including the role of construction history in the Soviet Union, the French approach to construction history and a paper from Turkey that discussed the use of construction records and historical writing. Perhaps the most interesting event on Sunday was the open floor discussion - brilliantly chaired by Robert Thorne (CHS Journal Editor) - on the future of construction history as an intellectual discipline. Robert invited 4 distinguished academics to the platform to deliver their verdict on the Congress and to lead the debate on the future of the discipline.

Professor John Ochsendorf of MIT expressed concern at where the boundaries of construction lay and whether the subject matter should be more carefully defined. Any definition of the subject should be closely connected to research work. He also pointed out that many countries that had a great building culture were not present at the Congress and that is something that needed to be worked on for the next Congress.

Dr. Janet Delaine of Oxford University was not sure construction history should be tightly defined. By being open and more loosely defined this had the potential to lead to more interesting research and cross-disciplinary collaboration.

Professor Santiago Huerta of Madrid University expressed the wish that construction history should become a legitimate academic subject and established in the Universities. International Congresses were likely to help with this process.

Professor Werner Lorenz of Brandenburgische Technische Universität Cottbus was fulsome in his praise of the Cambridge Congress - the organization of the event and the range of papers presented. He felt there were some significant gaps in the intellectual debate, particularly no discussion of construction history in Eastern Europe or Russia.

Robert then opened the discussion to the floor and for the next hour there were a range of interesting ideas on what direction construction history should take.

The Farewell Address was delivered by Professor Jacques Heyman who not only gave some interesting engineering insights into historic structures at Cambridge University, but also expressed his thanks for all the hard work of the Congress organizing committee.

The Cambridge Congress would not have been possible without the help of sponsors. As a registered Charity the CHS does not have the resources to undertake a large Congress single handedly. Dr. James Campbell was tasked with coordinating the efforts of the organizing committee in seeking out sponsorship. James did a brilliant job and really it is thanks to his efforts that the Congress went ahead. The organizing committee would like to thank all the sponsors, but in particular the Royal Netherlands Embassy in London for funding the reception and most of all the Brick Development Association for their very generous help.

The bedrock of any Congress are all those volunteers who help make the event run smoothly and ensure the delegates enjoy the event. An outstanding contribution was made by Emma Tutton who not only worked hard throughout the Congress but also helped set up the

event. She did this work tirelessly and without any complaint. The Congress organizers were ably assisted by Catherine Tutton, Andy and Adam Jackson and John Keenan. A special mention is due to David and Steve - both undergraduates at Queens' College - who ran all the IT facilities at the Congress. Many delegates commented on the efficiency with which the PowerPoint presentations were organized.

Thanks are also due to Layla Kamrani who designed the brochures and poster advertising the Congress and who also designed the cover of the Proceedings. Likewise a debt of gratitude is owed to Dr. Brian Callingham (Fellow of Queens' College) who took the photographs which were used on the Congress website, brochure and poster and who let us use his work without charge.



*Michael Tutton (Congress Treasurer)*

However, my most fulsome thanks is directed to my colleagues on the organizing committee who have been planning the Cambridge congress for the past two years: to Michael Tutton, who took on the onerous role of Congress Treasurer and has probably been the busiest member of the committee; to Dr. James Campbell, whose contribution to the committee has been outstanding, particularly in regard to sponsorship, the congress website, choice of venue, organization of field trips, the preparation of the Proceedings and all things related to academic matters; to Dr. Hentie Louw for his efforts in regard to sponsorship and steady hand when disagreements emerged. As chair of the organizing committee it has been my great pleasure to work with such hard working and talented people.

Details of all the papers delivered at the Congress and other information is available on the Congress website at [www.chs-cambridge.co.uk](http://www.chs-cambridge.co.uk)

*[The following is an extract from 'Cambridge Colleges' by K. Brimley Johnson published by T. Werner Laurie, Clifford's Inn, London EC in 1910. It was submitted by John Keenan, who extracted it from a copy of the book kept in the CIRCA archives.]*

#### Queens' College, Cambridge

In 1446 one Andrew Dorket, Rector of St Botolph's, obtained a license to found *The College of St Bernard of Cambridge*; but, enlarging his plans during the following year, he persuaded Queen Margaret of Anjou, wife of Henry VI., to become his foundress.

This lady was then aged fifteen and thus petitioned her royal spouse:

"In the Universitie is no College founded by eny Quene of England hindertoward. Plese hit therfore unto youre highnesse to yeue and graunte unto your humble wif the fondacion and denominacion of the college to be called and named the Quenes Collage of Sainte Margerete and Saint Bernard."

To all of which Henry gave gracious assent.

Civil war prevented the immediate completion of the first court; but Doket survived, and prudently secured the patronage of Edward IV's queen, Elizabeth Widvile, who refounded the college in 1465. Hence its correct name is Queens', not Queen's. At this period (164 years after the foundation of Peterhouse) the plan of an English manor had been evolved as that best suited to the requirements of a college.

"The arrangement of the principle court is the same; and in the second or subordinate court, approached by the passage through the screens, we find the apartments of the President occupying the same position, for example, as those of the lord at Haddon Hall."

The buildings, again, are of a deep red brick with stone dressings; which give it an appearance of picturesque antiquity beyond its actual age. In 1544 the adjoining house of the Carmelites was surrendered, first voluntarily and afterwards by royal command, to the college; which then extended over a site practically identical with the present.

Contrary to what might perhaps be supposed at first sight, the first (or principal) court is also the oldest. Here the south side and the builds which flank the stately tower gate were (and are) occupied by chambers: the north side contained the old chapel (now lecture room and library) and the old library: the parlour hall, and butteries faced the entrance. Except for the replacing of eaves by battlements and cutting out foliations from the windows, the external appearance of these buildings remains unaltered. The turret at the south-west angle adjoins the rooms assigned by tradition to Erasmus, who was "allured with the situation of this college so near the river (as Rotterdam, his native place, to the sea) with pleasant walks thereabouts."

The west side (adjoining the river) of the beautiful cloister court, now containing the president's lodge, was built in 1460, the cloisters connecting this with the main court (but without any rooms over them) in 1495. Then in 1510 came a gallery for the master,<sup>1</sup> over the combination-room, and, about 1540, the present famous gallery, a noble building in two storeys, each eighty feet long and twelve feet wide, constructed entirely of timber. It overhangs the cloister on each side, its walls being carries by carved brackets springing from the cloister walls, which, however, do not correspond in position with the arches below.

The Fellows' Gardens, north of the cloister court belong to the seventeenth century. The third, or Pump, court was built in 1564: but, falling into ruins, was rebuilt in 1756 by Mr Essex, "an eminent architect and a man of good understanding and a character in Cambridge."

The range along Queen's Lane belongs to 1616, rebuilt in 1778; and no further additions were made till Fawcett built the block adjoining King's in 1886. The chapel by Bodley & Garner, standing in Walnut Tree Court, dates from 1890.

It should be noted that the quaint wooden Bridge (beneath which our view shows the old town wooden "Small Bridges") was built in 1749.

In the college books may be seen the names of Erasmus and Bishop Fisher.

<sup>1</sup>From which "he could pass into the library and from the library into the chapel: see and hear what was going forward in the hall

through a narrow window in his south wall, and command the principal court by a window in the angle between the north and west passages.” ]

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## **CONSTRUCTION HISTORY SOCIETY AGM CHAIRMAN'S REPORT - 1<sup>ST</sup> APRIL 2006 (HENTIE LOUW)**

The CHS Management Committee met three times since the last AGM (6th July, 14th September and the 16th February). Since the CHS programme this past year has been completely dominated by the organisation of the 2<sup>nd</sup> International Congress, leaving me with less than usual to report in specific terms, and, since this is my last meeting as Chair (I was elected after the November 2001 AGM), it seems fitting to use this opportunity to take stock of the Society's activities over the last four years in the light of our declared aims and objectives.

In 2002 three areas were identified (see CHS Newsletter No. 64) as an appropriate focus for CHS efforts:-

- How to get the message that construction history matters across to the building industry in the UK.
- How to consolidate and secure the intellectual foundations of construction history as a field of study through the promotion of research, debate, conservation and teaching.
- How to become more active in the international arena and to collaborate with others sharing these objectives across national boundaries.

How far have we got with these ambitions and to what extent do they still reflect the will of the Committee and the Society?

### Promoting construction history in Britain

This is a primary task of the Society and we do that at several levels through: meetings and participation in debates and events related to the subject; publications; lobbying of authorities; cooperation with like-minded bodies/groups; preservation of archive material etc.

Since the joint meeting with the SAHGB in 2001 we have hosted an anniversary event for the Society for the Protection of Ancient Buildings (SPAB) in 2002, and in 2004 we held a very successful joint technical day with the same at Hampton Court Palace on historic chimneys. In 2005 we joined up with the Archives Panel of the Institution of Civil Engineers to commemorate the life of Thomas Brassey, the Victorian contractor. There is much scope for this kind of activity, which should ideally be a regular feature of CHS life, but it requires enthusiastic individuals to champion these causes (and do the work!).

As far as publications are concerned our two established channels - the *CHS Newsletter* (edited by Malcolm Dunkeld) and *Construction History* (edited by Robert Thorne and Christopher Powell, with Simon Pepper) - have consistently been producing good quality work. They are our best advertisement to the community at large and fully justify the investment made by the Society in sponsoring them. Three issues of the newsletter (Numbers 71-3) appeared since the previous AGM and like the preceding numbers under Malcolm's direction they contain a rich variety of material of national and international interest. Malcolm is sadly retiring after Volume 74, so we are looking for someone enthusiastic and enterprising to take on this important role for the Society. The newsletter reaches the widest

audience and for it to fulfil its full potential as a general platform for the exchange of topical information and a link between practice and the academe, more participation from Society members and others is needed - it is still too reliant on the editor's efforts alone.

Volumes 19 and 20 of our journal appeared since the last AGM and maintained the high standard of previous issues. We are grateful to Robert, Chris and Simon for their efforts. Problems with the printer caused a significant delay, with the result that the issue run is now one year behind. It is essential to catch up. *Construction History* is the flagship of the CHS, nationally and internationally, and a measure of our standing in the academic community (It is currently taken by more than 60 university libraries - about 40 of them overseas). Again there was a good range of papers. I did an analysis of the journals' content for the period, 1985-2002, in *CHS Newsletter* Number 72 (2005), which shows how the geography of the subject area is beginning to take shape. *Construction History*, as the only academic journal dedicated to the subject, is playing an important role in mapping this process of development. Maintaining a balance between British and international topics may become more of a challenge in the future. The rapid expansion of the subject horizons recently, and the improved contact amongst the scholars working in the field internationally, makes this also an ideal opportunity to review the journal's organisational structure so as to take account of the evolving situation. Now that the printing problems have been resolved we can concentrate on restoring the annual sequence and the editors are currently exploring the feasibility of producing a special edition for 2005/6, commemorating the Congress. The idea is that it would contain a selection of papers from the Congress, a cumulative index for *Construction History* as well as a subject index for the Congress Proceedings. We have put in a bid for a grant to the Graham Foundation of Chicago to help fund this publication.

Amongst the strategies that we have employed to promote the subject and the CHS in the UK is coupling the AGM with a public lecture and moving the venue around. For my period of office, apart from London, we have met at Bath, Liverpool and now Cambridge. The public lectures have been of high quality throughout, but the attendance has been rather disappointing. Perhaps in the future, with an increased membership, it might be worth exploring linking the AGM with an annual conference. Other societies like the SAHGB have found this a successful arrangement.

The Society's link with CIRCA to date has been a useful channel for helping to preserve historic records of the building industry in the UK, but for this facility to realise its potential as a source of information for scholars in the field, thereby justifying the Society's continuing support in the future, it would require more curatorial input and a systematic cataloguing system that can be freely accessed from outside. We have allocated some funds during this period to help set up the facility in its Stroud location, but more serious investment is called for, well beyond the Society's limited resources. It remains yet a further challenge for the Committee.

In the field of education progress has also been rather slow. The annual Stanley Smith Book Prize was won by a student from London South Bank University ----. Again the uptake was disappointing considering the potential target audience in the UK. We have promoted the Building Observatory, Hackney, London, through publicity in the newsletter and by holding the 2005 AGM on their premises. It focuses on educating the general public and children about the built environment and deserves to be better known. Visits to historic sites are potentially an important aspect of CHS developmental activities, but our attempts to revive the programme - which was very active in the Society's early life - were not successful. Likewise, our overtures to the construction industry have met with little success. An important reason behind the Cambridge Congress was, therefore, to raise the profile of the CHS in Britain as well as abroad and there are already some positive spin-offs in this

regard, with hopefully more to come.

First, the Society's publicity material (website, posters, brochure) have been improved. We have had professional help with this during the preparation for the congress and arguably the image of the CHS and its activities now projected is much more progressive. This is bound to be noticed in the current competitive environment. Second, we have gained significant commercial sponsorship for the event (Brick Development Association, Ventrolla), which provides a useful link with industry to be further consolidated. Third, we have been awarded a grant from a leading academic sponsor (The British Academy) for speakers, which adds academic credibility to our activities, with a potential further award from another international award-giving body as a prospect. Fourth, we have significantly increased the Society's overseas membership through making this part of the congress delegates' package (the onus, of course, is now on us to hang on to the new 'recruits' by making it worth their while to become long term members of the Society). Fifth, we hope to have attracted the attention of the local professional press with this event (though, this might still require a little help from a sympathetic delegate, willing to send in a review of the meeting?). Finally, with this congress we believe that we have significantly broadened the Society's perspectives (and ambitions) by introducing colleagues to fellow enthusiasts from other countries. That alone is worth the investment of the Society's resources and hopefully sets the trend for regular exchanges of the kind across national and cultural borders.

#### Promoting construction history as a field of study and international collaboration

During my term in office the Society's efforts in this respect have been directed towards the broadening of our international reference base. The subject seems to lend itself naturally to this approach, and the evidence is that our membership is developing a taste for such interaction. The challenge before us is to maintain a balance between the global and the local. This balance will be different for each country, but it remains an important issue to keep in mind. In the UK's case it is probably true to say that most progress has been made on the international front, which, from my point of view is not entirely satisfactory, although not a cause for alarm either, i.e. in the short term.

I would argue that it should be the aim of the CHS to stage an international event regularly - on a small scale, that is. The Italians seem to do that well. We clearly have much to learn from each other since our concerns and interests are so similar, as this congress bears testimony. At the Madrid Congress I tried to make the case for closer international collaboration in construction history. I then identified a number of issues that seem to be generic to the nature of the activities of organisations like us in the field (*Madrid Proceedings*, 2003, I: 45-6); there is much common ground. I should perhaps stress that I am not here making an argument for an over-arching international association in the field. Since the Madrid Congress the CHS Management Committee has debated this issue at length and concluded that it could not support the formation of a separate international body. At present it suited the Society's interests better to pursue the subject both as an international and local topic such as the opportunities permit, but to seek actively to collaborate with like-minded groups abroad on an equal basis. The Cambridge Congress is the outcome of that decision.

The Spanish construction historians have set the example with Madrid 2003. We picked up the baton and would now like to pass it on to another group in one of the construction history 'hotspots' that is beginning to emerge. There is obviously much untapped interest/expertise in the subject. For this congress alone we have received over 400 abstracts, with 195 papers being presented and I am sure that this is only scratching the surface. In the final analysis, the whole matter of how to manage the growth of the subject might

well resolve itself through the act of growing. It seems we do have a loose framework in place to steer the process, so perhaps we should just lean back and enjoy it.

(Replies to: Dr. Hentie Louw e-mail: [H.J.Louw@newcastle.ac.uk](mailto:H.J.Louw@newcastle.ac.uk))

## **CONSTRUCTION HISTORY SOCIETY TREASURER'S REPORT FOR THE YEAR ENDING 31ST DECEMBER 2005 (ALAN PALMER)**

I took over as Treasurer from Peter Longley in August 2005.

Disinvestment of £4550.00 was necessary in January 2005 to feed the current account in order to cover website costs, Journal costs (for 2004) and early expenditure on the Cambridge Congress.

Without the Cambridge Congress the Society would have shown a surplus of £3,040.00

The very large item of income against the Cambridge Congress is delegate fee income, much of this will be set against the account from Queens' College for catering and accommodation and against the cost of the Proceedings. However the Congress is heading for a modest profit, hopefully sufficient to claw back the disinvestment and losses over the last few years. This together with the increased membership from the Congress and the planned subscription increase next year will put the Society back on firmer footing for future years.

Signed Alan Palmer  
(Treasurer 20<sup>th</sup> March 2006)

### **Independent Examiners Report**

To the committee of the Construction History Society

- This report relates to the accounts for the year ended 31st December 2005, which are attached.
- The Charity's trustees (i.e. the Committee) are responsible for the preparation of the accounts. The Trustees have determined that an audit is not required by the Charities Act 1993 (the Act) but an independent examination is necessary because both income and expenditure are over £10,000.00
- It is my responsibility to:-
  - Examine the accounts as required by the Act.
  - Follow the directions of the Charity Commissioners set out in the Act.
  - State whether particular matters have come to my attention
- My examination was carried out in accordance with the general directions given by the Charity Commissioners. An examination includes a review of the accounting records kept by the Charity and a comparison of the accounts presented with those records. It also includes consideration of any unusual items of or disclosures in the accounts and seeking explanations from you as the committee concerning any such matters. The procedures undertaken do not provide all the evidence that would be required in an audit and consequently I do not express an audit opinion on the view given by the accounts
- I certify that:-
  - An audit is not required by the Act.

- I have an understanding of the Charity's organisation and accounts system.
- I have compared the accounts of the Charity with the accounting records and find them to be correct.
- I have found no matters which require explanation by the trustees or post-year end events relevant to the accounts.
- I have read the Treasurer's Report and consider that there are no other matters which should be drawn to the attention of members

Signed: D. Patel

(Chartered Accountant and Independent Examiner. Date: 21<sup>st</sup> March 2006)

**Construction History Society Annual Accounts for the Year Ending 31<sup>st</sup> December 2005**

(The following are the Society's annual accounts for the year ending 31<sup>st</sup> December 2005 together with the *Treasurer's Report* and *Independent Examiner's Report*. Please note the amounts shown reveal a large surplus from the Cambridge Congress, but the great majority of this money will be paid to Queens' College for catering and accommodation services. The final accounts for the Congress were not available at the time of the AGM and the Year End for which these accounts were prepared. Thus the figures do not represent profits but merely amounts passing through the Society's books. The actual profit, if any, from the Cambridge Congress will appear in next year's *Income and Expenditure account*. Michael Tutton, CHS Secretary)

2004		2005
£		£
	Income	
4,935	Subscriptions	5313.97
5,579	Publication Sales	5832.00
115	Donation	7.00
1,078	Dividends and Interest Received	893.36
0	Cambridge Congress	85,196.65
<u>11,707</u>	<b>Total Income</b>	<u>97,242.98</u>
	Expenditure	
1,088	Meeting Expenses	704.53
1,390	Publications	6,159.00
6,498	Publicity and Development	275.57
2,669	Administration	1,816.70
465	Conferences	0
528	Cambridge Congress	8,358.96
268	Insurance	0
0	Grants	50.00
<u>12,906</u>	<b>Total Expenditure</b>	<u>17,364.76</u>
(1,198)	(Deficit)/Surplus	79,878.22

**Construction History Society Annual Accounts for the Year Ending 31<sup>st</sup> December 2005**

Balance Sheet

2004		2005
£		£
20,343	Accumulated Fund brought forward	19,514.57
369	Unrealised Gain	0
(1,198)	Plus Surplus	79,878.22
<u>19,514</u>		<u>99,392.79</u>
	<u>Charities Aid Foundation</u>	
591	Current Account	2,570.27
18,923	Investment Funds	14,747.12
	<u>HSBC (Cambridge Congress)</u>	

0	Current Account	19,905.42
0	Deposit Account	62,169.98
<u>19,514</u>		<u>99,392.79</u>

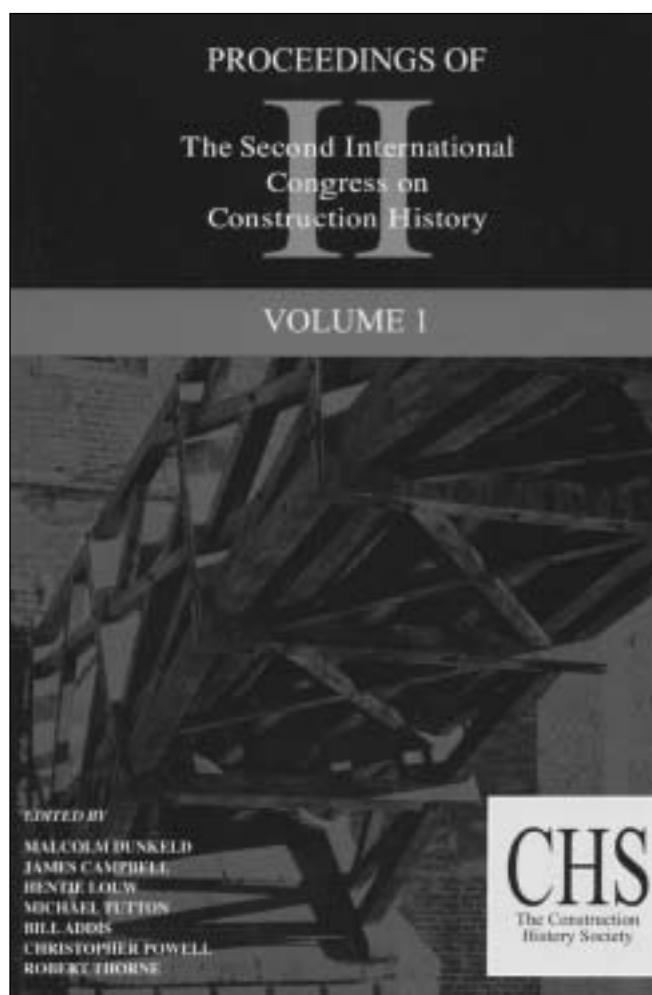
I certify that these accounts have been prepared from the records kept by the Treasurer and are in accordance therewith.

Signed: D. Patel

(Chartered Accountant and Independent Examiner. Date: 21<sup>st</sup> March 2006)

**PROCEEDINGS OF THE SECOND INTERNATIONAL CONGRESS ON CONSTRUCTION HISTORY**

Delegates attending the Second International Congress on Construction History at Cambridge were given the 3-volume set of Proceedings as part of the registration fee. The document is hardbound and contains the 198 papers and keynote lectures delivered at the Congress. The Proceedings are beautifully illustrated throughout (in black-and-white) and represent the latest research work in the field of construction history.



Limited copies of the complete Proceedings are still available at the price of £110 (excluding post and packaging). For further details contact Michael Tutton, CHS Secretary, 33 Lausanne Road, London N8 OHJ, United Kingdom. E-mail [michael.tutton@virgin.net](mailto:michael.tutton@virgin.net)

## **THIRD INTERNATIONAL CONGRESS ON CONSTRUCTION HISTORY - MAY 2009, COTTBUS, GERMANY (WERNER LORENZ)**

As a result of a series of informal talks at the Cambridge Conference, the Berlin-Brandenburg Construction History Group will be pleased to take the responsibility to host the 3rd International Congress on Construction History in May 2009. The congress will be held at the Brandenburgische Technische Universität Cottbus (BTU), managed by the Chair of Construction History and Structural Preservation.



*Professor Werner Lorenz*

Cottbus is located about 100 km southeast of Berlin, near the Polish border. It offers best possibilities to house a congress of this kind; a wide range of hotels with excellent standard is available at a good price. For construction historians the region offers a fascinating number of significant places of construction history. After having been Prussia's Centre of textile industry in the late 19th and early 20th Century, in the 1950s Cottbus became the "Energy Capital" of former East Germany. Today the historical textile mills within the city as well as the surrounding open cast mines, power stations and historical briquette factories characterise an interesting region, which shows exemplarily the challenge of the transformation of a late industrial landscape into the 21st Century, a challenge confronting a wide range of regions from the Baltic States down to Romania today.

The newly built buildings of the BTU Cottbus provide modern facilities and a professional atmosphere. The BTU is the youngest technical university of Germany, founded in 1991 just after the German reunification with the aim to realise new concepts for a modern engineering education. Historical subjects are strongly embedded in teaching both engineers and architects. Also, specific historically orientated master courses such as *World Heritage Studies* (under the patronage of the UNESCO) and *Building & Conservation* are offered here. Part of the innovative concept was the installation of a strong historical department in building sciences, the Department of History of Architecture and Art, including the first chair of Construction History and Structural Preservation at a German university.

The congress will include a 3-4 day conference program, and 1-2 days of various guided tours to monuments of construction history in the region as well as in Berlin, Potsdam Dresden and Leipzig - places

that can be reached by bus in less than 2 hours. A post congress program will be offered including two guided tours to Poland to visit the famous *Dirschau Bridge* near Gdansk and Max Berg's *Jahrhunderthalle* in Wroclaw.

The organising committee will take up the very constructive stimuli and ideas for the future development of the international community of construction history, which were discussed at the end of the Cambridge Conference. Several German colleagues have already announced their assistance. Together we will do everything possible to continue the tradition of the extraordinary successful conferences in Madrid and Cambridge.

The Berlin-Brandenburg Construction History Group will be pleased to welcome the friends of construction history in May 2009 in Germany.

Dipl.-Ing. (FH) Lydia Hahmann, Cottbus  
Prof. Dr.-phil. Andreas Kahlow, Potsdam  
Dr.-Ing. Karl-Eugen Kurrer, Berlin  
Prof. Dr.-Ing. Werner Lorenz, Cottbus  
Dipl.-Ing. Volker Wetzck, Cottbus

(Replies to: Professor Werner Lorenz e-mail: [werner.lorenz@tu-cottbus.de](mailto:werner.lorenz@tu-cottbus.de))

## **MORTAR DATING IN MEDIEVAL AND CLASSICAL ARCHAEOLOGY (ÅSA RINGBOM, JOHN HALE, JAN HEINEMEIER, ALF LINDROOS AND FIONA BROCK)**

There are many anonymous buildings dating from the Classical and Medieval Periods where their date of construction cannot be established from written sources or dateable artefacts such as coins.

Mortar is different from other dateable material in that it is usually abundantly available in ancient buildings or ruins, from all the different building stages. Mortar dating - if successful - could therefore provide an important chronological key in archaeology. Since 1994 the interdisciplinary *International Mortar Dating Project* has been devoted to developing the method of dating lime mortar and concrete-like materials.  $^{14}\text{C}$  has been analyzed in mortars from Medieval churches in the Åland Islands in the archipelago between Finland and Sweden, and also from Classical Archaeology (i.e. ancient buildings in Italy, Spain and Portugal, from the time of the Roman Empire and from Medieval structures in Rome itself).

The methodological development of this technique has been both complicated and time consuming, and is therefore best illustrated by a chronological account of our work. The methodological principle has been known since the 1960s (Labeyrie and Delibrias 1964), but many factors have stopped its use in practice including carbon forms influencing the results. However, testing mortar dating in the 1980s in the ruins of the Franciscan convent of Kökar, in the outer Åland archipelago, was encouraging enough for us to continue refining the method within the *Project of the Åland Churches*, initiated in 1990. In the beginning the  $^{14}\text{C}$  dating was done with conventional radiocarbon counting technique which involved large samples of approximately one kilogram; but in 1994 this was replaced by analysis performed by AMS (Accelerator Mass Spectrometer) (Heinemeier et al. 1997). This was an important improvement that allowed the dating of much smaller samples (one thousandth), that are easier to prepare and to analyze.

We will describe how the Åland project of dating Medieval mortars soon spread into the world of Classical Archaeology, and how it was

gradually implemented for different types of mortars from different parts of the Roman Empire. The project is directed from Åbo Akademi University in Finland, whereas the  $^{14}\text{C}$  AMS analysis is performed in the Accelerator Laboratory, Aarhus University in Denmark. The team has expertise in Classical Archaeology (both for Rome and for the Iberian Peninsula) and recently the implementation of the Oxford Radiocarbon Accelerator Unit at Oxford University has joined our team. As far as we know, we are now the only team pursuing the development of this technique.

### The Principle of Mortar Dating and the Preparation Procedures

The principle behind mortar dating is straightforward (Van Strydonck and Dupas 1991, Hale et al. 2003; Lindroos 2005). At the time of hardening the mortar absorbs  $\text{CO}_2$  from the atmosphere, and thereafter it can be subjected to normal  $^{14}\text{C}$  dating analysis like organic materials, shells, corals, young limestone etc. (fig. 1).

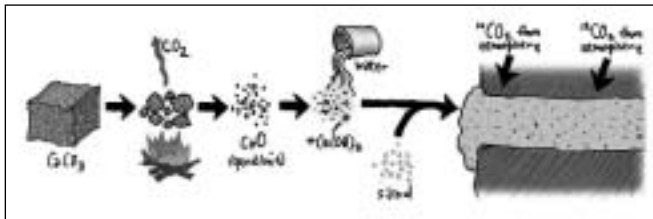


Figure 1. The principle of mortar dating. The chemistry of the hardening process, where carbon dioxide from the atmosphere is absorbed into the mortar; Hale et al. 2003.

The results given as  $^{14}\text{C}$  ages BP (Before Present = AD 1950) have to be converted to calendar years by means of a complex calibration curve, which varies over time according to atmospheric  $^{14}\text{C}$  levels. The precision of the method varies depending on where the BP results intersect with the calibration curve. Medieval Scandinavian mortars are often disturbed by irregularities in the curve during the 14<sup>th</sup> century. But where the calibration curve falls steeply the results can be surprisingly precise. While it can be difficult to yield exact dates with  $^{14}\text{C}$  analysis in general, it is often possible to place the mortar within the right century. This can be useful in situations such as Åland, where the chronology has always been open to speculation.

Sampling has to be done carefully and one handful of mortar usually is enough. The mortar should preferably be taken from a place where it has hardened quickly, and the sample chosen with the help of archaeological expertise (to avoid selecting mortar from later building stages and subsequent repairs). The sample is then immediately in the field tested for alkalinity with the use of phenolphthalein.

The method of mortar dating has been known in theory since the 1960s (Labeyrie & Delibrias 1964), but contamination from unburned fossil limestone and re-crystallization of the mortar prevented experimental development of the method. To achieve accurate dating of the mortar the preparation process in the laboratory has to be meticulous, including mineralogical analysis and chemical analysis of the readily soluble component to determine the hydraulic index of the mortar (Van Strydonck et al. 1986).

The sample preparation procedure starts with mechanical separation, where the mortar is carefully crushed and wet sieved to select a suitable grain size. Through experience we have learnt that the optimal grain size varies depending on sample type, but is usually between 30 and 150  $\mu\text{m}$ . The material is further checked for unburned fossil limestone with cathodoluminescence microscopy (Lindroos 2005, pp. 8-11). During the preparation for  $^{14}\text{C}$  AMS-analysis further chemical separation is allowed to take place (e.g. the samples are dissolved in chilled phosphoric acid in vacuum kept in an ice bath). The reaction with the acid creates a flow of carbon dioxide gas that is interrupted at different stages and separate fractions are collected

for dating and stable isotope analyses.

The goal of the  $^{14}\text{C}$  AMS-analysis is to date the mortar itself, rather than organic materials enclosed in the mortar (e.g. charcoal, splints of wood, leaves etc). However, any organic material found embedded in the mortar is also separately dated to double check the results of the mortar dating. We have observed that charcoals reflect the so-called "old wood effect", in that they provide inconsistent results on dates.

Initially only two carbon dioxide fractions were dated per sample, approximately 15% and 85% of the collected reaction. This was on the assumption that porous mortar carbonate would dissolve more quickly than unburned fossil limestone, resulting in the first fraction being free from this kind of contamination. The second fraction, on the other hand, would most probably include the contaminant, and yield results too ancient (Baxter and Walton, 1970; Folk & Valastro, 1976).

### Mortars Dated in Two Fractions

#### The churches of the Åland Islands

The reason for using this technique on the churches from the Åland Islands was an urgent need to accurately date these buildings. For a long time the chronology of the Åland churches has been subject to controversy, due to a lacking of contemporary written sources. During the Middle Ages there were thirteen mortared stone churches and chapels on the islands, that both formed a surprisingly heterogeneous group in the immediate vicinity but were distinctly different from the churches in the surrounding area. Archaeological excavations failed to solve the problem and this led to many speculative opinions with wide variations in date depending on the authority cited. The *Project of the Åland Churches* was initiated to help solve this puzzle and from the beginning involved an interdisciplinary approach making use of different types of scientific dating. At first it seemed simple and straightforward: dendrochronology was the obvious answer, and a programme was started to count tree rings on the wood in the churches. However, the results of this testing were disappointing. Dendrochronological analysis could not date the initial building construction in any of the Åland churches as the naves had all had their original roof timber replaced. However, this technique did successfully date the church towers which were built later than the naves; this information added to an understanding of the chronology of the churches. It was therefore the case that mortar dating was the only option to establish the date for the first building stage of the churches.

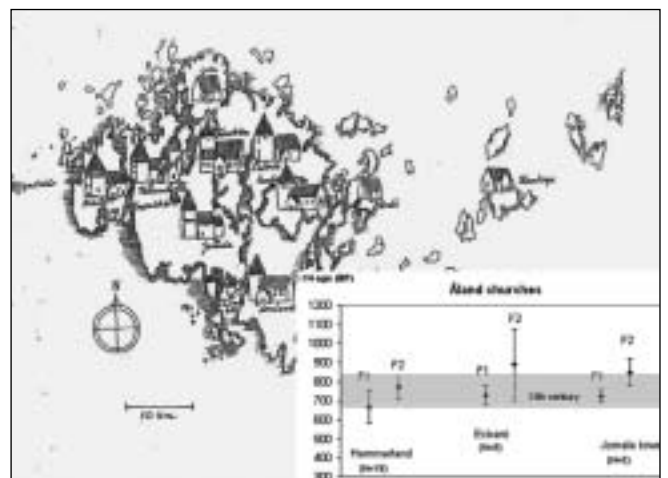


Figure 2. Statistical results from mortar analysis in two  $\text{CO}_2$  fractions from three churches in the Åland Islands. The first fractions suggest a building period towards the end of the 13th Century.

Four Medieval churches in the Åland Islands - those of Hammarland, Eckerö, Saltvik and the tower of Jomala, were the first to be dated

through  $^{14}\text{C}$  AMS analysis in two fractions. The results of the first fractions did indeed seem to prove the theory - they were void of contamination. The first fractions showed that initial church building in stone began on the Islands towards the end the 13<sup>th</sup> century (fig. 2). This unanimous chronology for the mother churches is surprising because no other evidence suggested a simultaneous building programme. On the contrary, the Åland churches are all very different from each other, both in size and plan, and to some extent in building technique. However, they do have unifying features including the use of the local red granite as the main building material, vaulting in field stones, framed windows and portals with local Ordovician limestone (the churches also avoid the use of bricks). In the case of Jomala church, the first fractions from five samples from the tower suggest the calibrated time span AD 1279-1291, corroborating satisfactorily with the dendrochronological analysis, which yields AD 1281 for the same structure. So the use of mortar dating appeared to be validated on the Åland Islands.

#### Torre de Palma, Vaiamonte, Portugal

Torre de Palma - a Roman villa in the eastern part of Portugal - provided the first test of the technique when applied to buildings from Classical times. The villa is situated close to the Spanish border and was one of the largest farms, or *latifundias*, in the Iberian Peninsula during the Roman period. Apart from the initial atrium house, the villa included two baths, vast surrounding living quarters with stables, and wine/olive presses, all suggesting a horse-breeding farm with a variety of other farming activities. Although sampling was carried out all over the site in 1997-2000, the adjoining basilica initially was the main focus of our interest. The basilica was erected in adobe, with a well-preserved mortared stone foundation that is still visible. The basilica has an unusual plan that is rectangular with a nave and two aisles and double apses (one in each end of the rectangle). Another rectangle was added towards the west and included yet another construction with two apses (Maloney & Hale 1996).

Mortar used in this periphery of the Roman Empire is not hydraulic and chemically it resembles the Medieval mortars from the Åland Islands. It is very different from the Roman pozzolana mortar described below. High quality marble - probably from the quarries in nearby Estramoz - provided pure raw material for the mortar limes. Thirteen samples were analyzed in two fractions from the walls of the initial basilica. Ten of them yielded the same results from their first fractions. Calibrated results suggest that the basilica was erected AD 535-600, probably by the Visigoths (Maloney, 2000) (fig. 3).

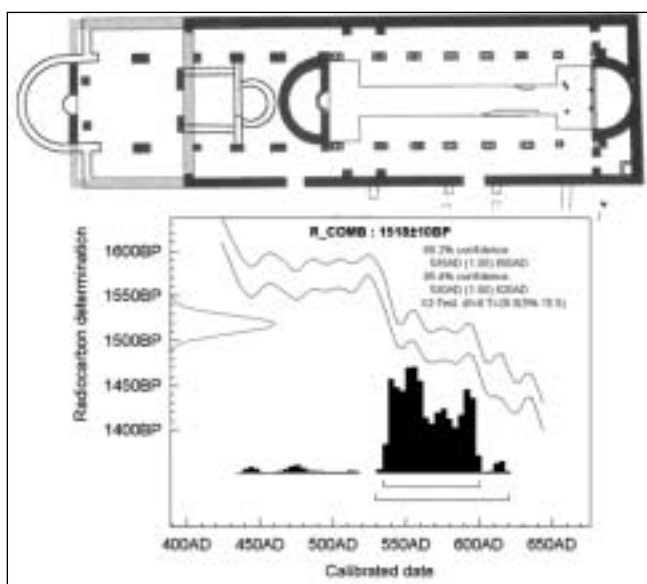


Figure 3. Plan and calibrated results from the double-apse Basilica of Torre de Palma, Portugal, Maloney 2000, Aarhus.

The second fractions of several of the samples produced dates close to those of the first fractions. The only exception was from a font in the southern sacristy, beautifully lined with hard mortar mixed with crushed bricks whose first fraction yielded results far too young. The same puzzling effect was later observed with all the waterproof constructions in the villa.

Work at Torre de Palma showed that the mortar dating technique could usefully be applied to buildings from Classical times. Sensible results were obtained from all the different buildings in the villa area from the Classical period. But yet again there was no opportunity to compare the results with other data. Because of this, and the fact that Torre de Palma and the Åland churches were not interesting enough, mortar dating did not establish itself with a wider audience.

#### Classical mortars from Rome

To validate the technique it was necessary to apply it to buildings where the dates of the structures is well known, such as in Rome. However, this approach presented other challenges. The Roman mortar, Pozzolana, is hydraulic with an entirely different chemistry to that which we had previously studied. Pozzolana mortar is the key to Roman architecture as one of the materials that revolutionised Roman building techniques. Pozzolana mortar is generally known to harden under water, without the necessity to react with atmospheric carbon dioxide (Blake 1968, pp. 312-318). Because of hydraulic Pozzolana the Romans were free to mould any variety of vaults, domes and cupolas (Lancaster 2005, pp.1-21), thus creating the strong constructions that we still know today.



Figure 4. Ancient Rome, Trajan's Market with Trajan's Forum in the foreground and the Medieval tower of Torre delle Milizie in the background, photo Åsa Ringbom.

1998-99 signalled the beginning of mortar analysis of ancient Roman Pozzolana concrete, but since the principle behind the dating method is based on analyzing the carbon dioxide absorbed in the hardening process, we did not expect encouraging results. The area in Rome, selected for sampling by Lynne Lancaster (a member of our team), included Trajan's Forum, Trajan's Market and the Basilica Ulpia (fig. 4). This area is known for the high quality of mortars from the Trajanic period. Sampling, supervised by Janet DeLaine, was also done in Ostia on structures dating from the reigns of Trajan and Hadrian. In both localities we had an opportunity to start testing the method on firmly dated mortars of an entirely new chemistry. The immediate impression of the results was very confusing. Samples taken in 1999 were separated in three fractions (the ideal aimed at was 30%, 30% and 40% of the total dissolution process). Of these fractions 1 and 2 were usually dated. The dates suggested by the first fractions were extremely uneven, and far too recent compared to the actual date known from written sources and brick stamps. However, after this initial disappointment we soon realized that the second fractions yielded dates close to the expected age, which was the reign of Trajan (AD 98-117) (fig. 5).

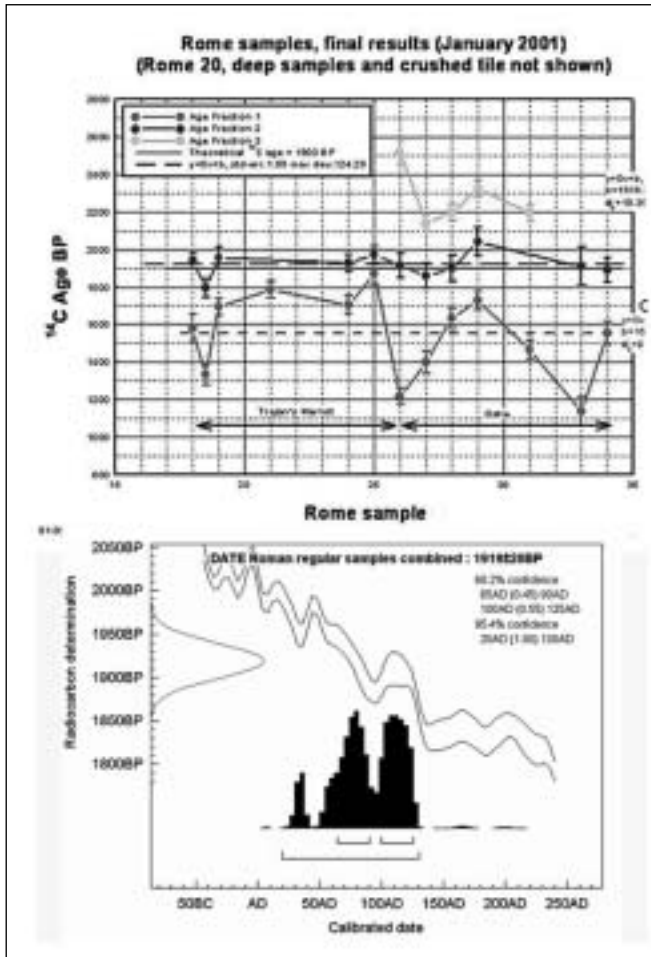


Figure 5. Results from Rome and Ostia, BP and calibrated. Joint calibration of the second fractions, united by an almost horizontal line in black, yield the age 65 AD-125 at a confidence of 68,2%, Aarhus.

### Medieval mortars from Rome

During our first sampling tour in Rome in 1998 samples were not only taken from buildings belonging to the Classical period but also from Medieval structures; at this stage the samples were separated in two CO<sub>2</sub> fractions only. This time the first fractions seem to give reasonable results. For example, Santo Urbano (recently uncovered in the excavations of the Via dei Fori Imperiali), obviously belongs to the Romanesque period. The first fraction from a Carolingian structure in the Forum of Nerva, intersected with the calibration curve during the end of the 8<sup>th</sup> century, and three samples from the Torre delle Milizie produced differing dates for the first fractions, but indicated a construction date for the tower in the 13<sup>th</sup> Century (table 1) (see fig. 12).

Sample	Carbon yield and fraction size (F)	<sup>14</sup> C age BP	<sup>13</sup> C	Calibrated age
<b>St Urbano</b> 3.5%				
AAR-4797.1	0.25 (per 12s)	920±30	-9.9	AD 1060-1135
AAR-4797.2	0.75 (per 22min)	1060±35	-9.9	AD 960-1020
<b>Carolingian Structure</b> 2.8%				
AAR-4802.1	0.47 (per 7s)	1250±25	-16.1	AD 695-780
AAR-4802.2	0.53 (per 40min)	3520±50	-6.4	BC 1880-1790
<b>Torre delle Milizie</b>				
AAR-4798.1	0.23 (per 10s)	835±30	-10.6	AD 1190-1255
AAR-4798.2	0.77 (per 34 min)	3575±50	-3.4	BC 2010-1830
	4.2%			

AAR-4799.1	0.31 (per 12s)	585±25	-11.1	AD 1330-1395
AAR-4799.2	0.69 (per 29min)	1205±45	-7.7	AD 780-810

		3.6%		
AAR-4800.1	0.26 (per 15s)	750±35	-14.3	AD 1260-1285
AAR-4800.2	0.74 (per 17min)	885±45	-8.3	AD 1040-1220

Table 1. <sup>14</sup>C dates and <sup>13</sup>C values for Medieval mortars from Rome. St Urbano: on top of Trajan's Forum. Carolingian construction: on top of Nerva's Forum. Torre delle Milizie: behind Trajan's Market.

These Medieval Roman mortars still include Pozzolana, and their chronology is less well known. Yet there has to be an explanation for first fractions in this case to yield reasonable results. Could the hydraulic character of the mortars explain the difference? It was now necessary to establish the hydraulic index of each sample (Van Strydonck *et al.* 1986, Van Strydonck and Dupas 1991). Our chemical analyses have revealed a corroboration between a low hydraulic index and a reasonable age for the first fractions, but this was not so obvious for all the Medieval mortars in Rome. At first sight, the results from the Medieval buildings seemed rather confusing. Although the first fractions yielded plausible results, they were not always congruent, and the second fractions occasionally proved to be unreasonably old.

Surveying our general results we gradually became aware of a statistical pattern. For non hydraulic mortars, the first fractions seemed to come close to the expected age. This interpretation, of course, was emphasized if several samples from the same building unit yielded the same result with the first fraction. If, in addition to this, both fractions from one individual sample coincided, then it provided additional support for relying on the result from the first fraction. The basilica in Torre de Palma fulfilled both these criteria.

With hydraulic mortars, both with ancient Roman Pozzolanas and maybe also with mortars made hydraulic by adding crushed bricks into the aggregate, the first CO<sub>2</sub> fraction generally yielded results far too uneven and too recent. However, in these cases the second fraction (see fig. 5) came close to the expected age. This knowledge was invaluable for a deeper understanding of the process of mortar dating, and it inspired the application of new routines.

### Introduction of Analysis in Several Fractions for Mortars from Classical Antiquity

The experience from Rome, where the second fraction produced dates close to the expected age, indicated the need to focus on the dissolution process, and the necessity of learning how to recognize the right age in anonymous samples. Thus in 2002 a decision was made that, to achieve the right age, the samples should be dated in at least five fractions that ideally consist of 20% of the total dissolution process (fig. 6). This was required to create a profile (e.g. fig. 8) for additional information and to get more data for modelling the effects of the contaminants.

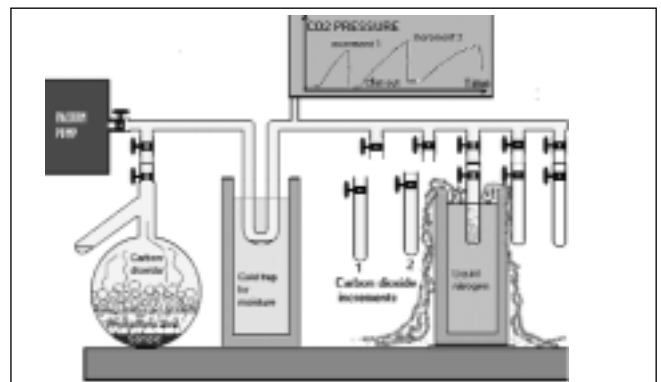


Figure 6. Chemical separation of mortar in five CO<sub>2</sub> fractions (i.e. increments), sketched by Alf Lindroos.

When several fractions tend to yield the same age the plateau of the profile normally coincides with the expected age. These profiles were introduced both for the Classical period and for Medieval structures.

By way of example we here present results from Santa Costanza - one of the best-preserved structures in Rome from the 4<sup>th</sup> Century AD - which has a somewhat enigmatic background. The original function of this cylindrical building, attached to the horse shoe shaped Basilica of Sant' Agnese is unknown and so is the date of its construction. The building has usually been seen as a mausoleum built by and for Constantina (daughter of Constantine the Great) while she was residing in Rome between marriages and is thought to have been built sometime between AD 330 and 337. However, excavations performed by Dr. David Stanley at the joint between the cylindrical structure and the horse shoe shaped Basilica, revealed that the latter originally was joined to a triconch construction under the present building of Santa Costanza. Consequently, Santa Costanza is a later addition to the Basilica. The chemical composition of the mortars from these two building units is also entirely different from each other (Materiali e tecniche... 2001, catalogue 2, pp. 207-209, and catalogue 11, pp. 240-241). Stanley dated Santa Costanza to the second half of the fourth Century (Stanley 1993) for which controversial view he has met harsh criticism (Rasch 2000, pp. 155-156). One sample collected from restoration works in Santa Costanza was first analyzed in two CO<sub>2</sub> fractions, with the typical result: the second fraction came close to the estimated age, or 1710 ±50 BP (calibrated AD 260-410). Renewed analyses in three fractions fitted in with the earlier results and together they provided a profile for which the radiocarbon age of 1690 ± 35 BP is defined by a horizontal level or plateau. This result supports Stanley's point of view (Ringbom 2003). However, the result from only one sample run in several fractions from two different chemical separations of the same grain size is obviously not sufficient. One completely new series of analysis in four fractions, performed at the Oxford Radiocarbon Accelerator Unit, confirmed the earlier result from the AMS Laboratory at Aarhus. A combined profile, with a plateau spanning three fractions yields a radiocarbon age of 1697 ± 19 BP, or after calibration AD 260-280 (5,8 %) and AD 330-390 (64,4 %) (fig. 7).

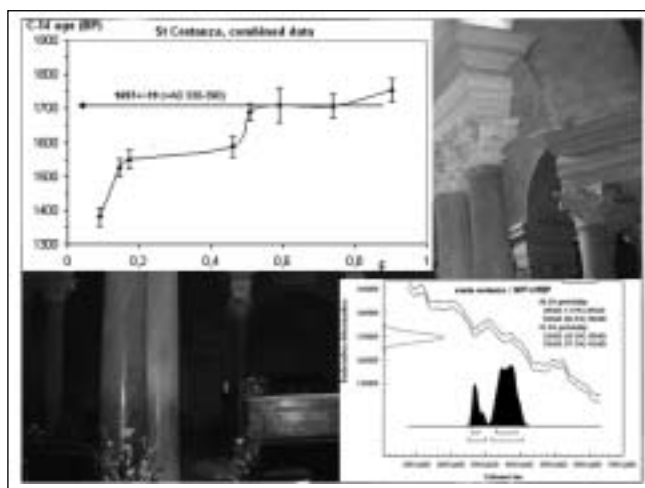


Figure 7. Profile from Santa Costanza and calibrated results, analysis initially performed at the AMS-laboratory, Aarhus, and later confirmed by the Radiocarbon Accelerator Unit, Oxford.

Extending the plateau to the last fraction does not make a great difference to the final result. The age 1710±17 BP thus yielded suggests a building period between AD 260-280 and AD 320-390. Repeated analysis of one sample has not finally resolved the enigmatic question of the date of construction. To determine the time of construction we will therefore need to analyze more samples in the future, both from Santa Costanza and from the original Basilica of Sant' Agnese.

One of the first samples from Rome, taken in 1998 from Basilica Ulpia (built by Trajan 106-112 AD), had initially been chemically collected into only two CO<sub>2</sub> fractions. To begin with the result was seen as a failure. However, the date of the second fraction was more or less as expected, and it therefore seemed like a good case to double check with a profile consisting of five successive fractions. This time the result was convincing. We received a regular profile (fig. 8) with a horizontal plateau at the known age, or 1873±18 BP, which after calibration gives AD 80-140.



Figure 8. Basilica Ulpia, Trajan's Forum. Results from the first analysis in two CO<sub>2</sub> fractions later confirmed by a profile created by five successive fractions, Aarhus.

The Amphitheatre at Merida Augusta, a town in western Spain founded by Emperor Augustus for his retired soldiers, is marked by the same kind of ambiguity concerning the date of construction as Santa Costanza. According to an inscription found in the Amphitheatre, it was erected in 7 BC. However, Pedro Mateos Cruz, (archaeologist and head of the National Museum of Roman Art in Merida), suggests that the construction of the amphitheatre belongs to the Flavian era, or AD 69-96 (personal communication, July 2000). In this case the mortar is very hard and concrete-like, and it has also been claimed to be hydraulic in character (Cruz 1999, p. 39). The mineralogy is most extraordinary in that it has a dominating magnesium rich component. An age profile from the Amphitheatre, based on eight fractions, reaches a plateau at the Flavian period (1944±27 BP, or AD 25-85 at 58,8 % and, AD 100-120 at 9,4%). In a case like this plenty of re-crystallizations influenced the early part of the profile. Chemical analysis shows that this mortar is not hydraulic. Even so, a plateau is not reached until the later fractions (fig. 9).

#### Analysis in Five Fractions of Medieval Mortar

These profiles from the Classical period were by comparison very informative. Our more complex chemical separation of the samples into five CO<sub>2</sub> fractions is a step in the right direction. The profile thus

created illustrates the dissolution process. The first part of the profile, which tends to be too recent, reveals the influence of re-crystallization or alkaline features, whereas the last part of the profile (which normally turns out too ancient) shows the influence of fossil unburned limestone dissolving at a slower rate than the mortar, as initially presumed.

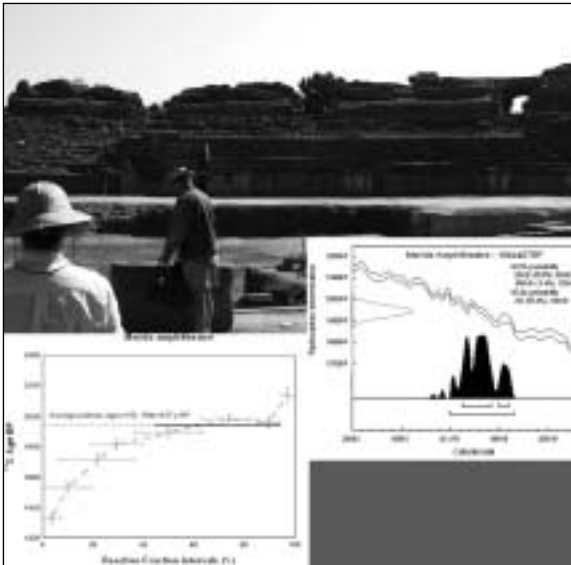


Figure 9. The Amphitheatre at Merida Augusta, Spain (Ringbom et al. 2003). Profile created by results from eight successive CO<sub>2</sub> fractions from the same sample, analyzed at two different occasions, Aarhus.

Based on our observations it seemed important to introduce analysis in five fractions to the Medieval mortar from the Åland Islands. The same procedure was consequently followed in the church of Sund, which had never been archaeologically excavated and where there were no additional means of dating from coins or artefacts. The church has a rectangular plan and is vaulted in two naves, with many details in the architecture and the wall paintings pointing towards a Gotland influence. The church was burned several times, which made dendrochronological analysis of the building constructions irrelevant.



Figure 10. The church of Sund, Åland. Five profiles from the nave of the church suggest a building date at the second half of the 13<sup>th</sup> Century, Aarhus. Photo Åsa Ringbom.

In total five samples from the nave in Sund were analysed in five fractions. Of these two samples were taken from the walls, one from a cavity in the wall (017), and one at socle level (014). The age profiles reach a plateau within the same time span, calibrated to AD 1240-95. Two additional samples (025 and 026) from the vault show atypical profiles with a sharp decrease in the radiocarbon age towards the end. Even if we cannot fully understand the irregularity of these profiles from the vault, the results of the plateaux seem to support the results from the nave (fig. 10).

In the case of Sund, an interesting chronological feedback is provided by a gigantic crucifix, measuring more than 5 m in height, and architecturally perfectly fitted in the vaulted interior (Ringbom & Remmer 2005, pp. 167-177). This crucifix is the largest to be found in a parish church north of the Alps, and it is therefore unlikely to have belonged to any possible smaller wooden predecessor. Dendrochronological analysis of the crucifix performed by Peter Klein from the Institute of Wood Biology, Hamburg University, Germany, suggests a cutting of the oak for the corpus in northern Germany some time between AD 1236 and 1246 (fig. 11).



Figure 11. The crucifix in Sund, originally a ring-crucifix of Gotland type. Dendrochronological analysis shows that the oak of the corpus of Christ was felled between 1236 and 1246, photo Åsa Ringbom.

Therefore, the church of Sund - which is representative of Medieval mortar from Scandinavia - the plateaux of the profiles seems to yield the right result. Why not the first fractions, as was the case earlier, when Åland mortars were analyzed in two fractions? The samples from Sund are slightly more hydraulic than other mortars from the Åland Islands and - more importantly - most of them showed the presence of readily soluble young and minor carbonate phases affecting the first fractions. In this case re-crystallization has been identified microscopically, and the results of the first fractions were different for all samples from the same building phase. The only place in the respective profiles where the ages are concordant, and which represents the bulk of the samples, is the horizontal level. The supporting date of the crucifix was also significant for the interpretation.

Similarly, when a sample from Torre delle Milizie which had previously been analysed in two CO<sub>2</sub> fractions in Aarhus (as described above), was analysed in five fractions in Oxford, the profile confirmed the estimated date of construction as some time towards the end of the 13<sup>th</sup> century and also demonstrated the extreme level of contamination of the successive fractions (fig. 12).

#### Checking earlier results from Åland

The interpretation of the profiles from the church in Sund (cf. fig. 10) demonstrated an urgent need to return to our earlier results from Åland. It was vital to know what sort of profiles would emerge from

samples of those non-hydraulic Medieval mortars analyzed earlier, and how they were to be interpreted. The results of profiles from Hammarland (fig. 13)

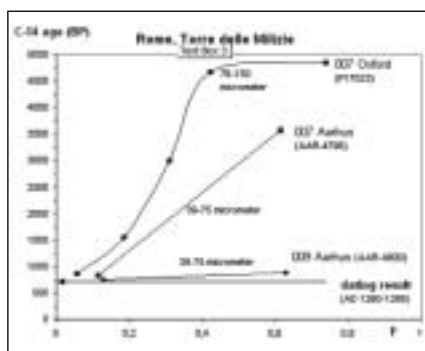


Figure 12. Earlier samples of mortar from Torre delle Milizie analyzed in Aarhus in two CO<sub>2</sub> fractions. The date to the 13<sup>th</sup> Century is confirmed by a profile of five successive fractions of sample Rome 007, Oxford.

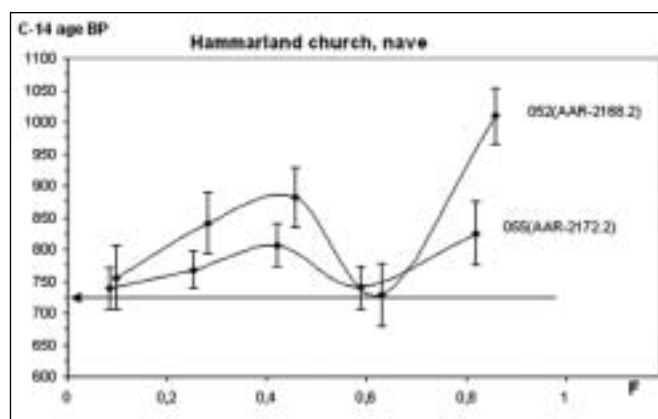


Figure 13. The church of Hammarland, Åland. Earlier results analyzed in two CO<sub>2</sub> fractions confirmed by profiles: the building of the nave took place during the last quarter of the 13<sup>th</sup> Century, Aarhus.

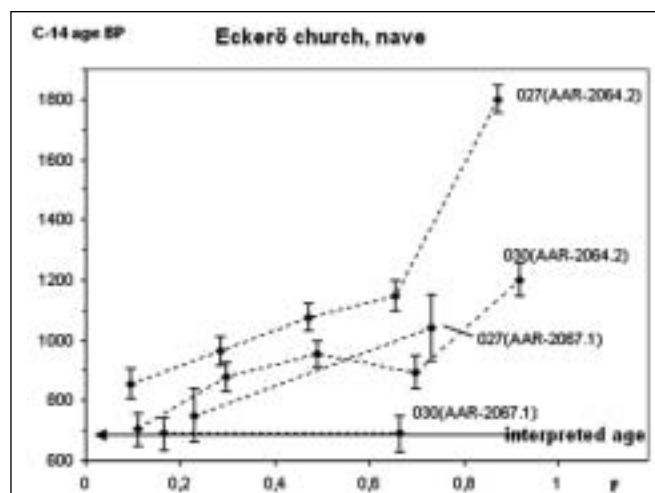


Figure 14. The church of Eckerö, Åland. Earlier results analyzed in two CO<sub>2</sub> fractions double checked and verified, Aarhus.

and Eckerö (fig. 14) were reassuring: the first fractions of the profile tended to yield the same age as the initial, whereas plateaux were hard to find. This is because readily soluble Åland limestone is abundant in the aggregates. One of our first improvements of the method, when we adopted AMS analysis, was to minimize the size of the first CO<sub>2</sub> fraction. The new results from the profiles confirmed that this was the right approach.

### Challenges in the Future

The first big challenge - to identify, separate, and minimize

contaminating fossil limestone in the samples prepared - now seems to have been met successfully even though mechanical separation could still be improved. The second big challenge was to date hydraulic Roman Pozzolana mortar. When analysing samples separated in only two CO<sub>2</sub> fractions we found that the expected age was reached with the second fraction. Corroboration was provided from dates firmly known from brick stamps and historical sources. In order to improve the resolution of the chemical separation, dating in five successive CO<sub>2</sub> fractions from each sample was introduced. These <sup>14</sup>C age-profiles are more informative and enable mathematical modelling of contamination and re-crystallization.

The third big challenge lies ahead in the future. This will be to find a precise way to interpret the profiles correctly, or rather, to find out when the results of the first CO<sub>2</sub> fractions are relevant for the dating, and when we should rely on the plateau in the profile for the right age. Already now we know that the interpretation depends on the character and the quality of the mortar, but we believe that we can see a statistic pattern: with non hydraulic mortars usually the first fraction counts, whereas hydraulic pozzolana mortars reveal the right age at the plateau of the profile. When, occasionally, profiles from less hydraulic mortars result in distinct plateaux, these tend to reveal the right age. However, here the nature of the first fraction is the real key, it shows whether the mortar has been subject to re-crystallization or not. The identification of the re-crystallizations is therefore crucial in our continued research.

It is clear that further work needs to be done on refining the method. But it is important to test the limits for the implementation of mortar dating, i.e. different kinds of mortars, from different parts of the world, and from different chronologies. Thus, in addition to the continued quest for the correct chronology for the Åland churches, we intend to focus equally on international applications of the method.

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## THE FIGHT FOR THE CIVIC SOUL OF DRESDEN: ITS DESTRUCTION AND REBIRTH AFTER 1945 (JOHN SOANE)

The sudden and complete obliteration on February 15<sup>th</sup> 1945 of one of the most beautiful cities in Europe - sometimes known as the Florence of the Elbe - is one of the defining benchmarks of the cultural consciousness of the Twentieth Century. This tragic event was one of the most dramatic and terrible examples of how the power of the modern industrial state, by focusing on absolute political and military objectives in a totally impersonal way, can suddenly and completely erase ancient organic relationships between the inhabitants of well established cities and their historically evolved, urban structure. This personal relationship between citizens and their built environment had been the cornerstone of the European - and especially the Central - European civic tradition for centuries. Consequently, the abrupt removal of many of the familiar townscapes that had previously been taken for granted in Dresden and other European cities at the end the Second World war seemed to bear out the fears of pre-war social commentators who believed that modern technology, in both its benign and violent guises, in conjunction with the utilitarian rationalism of Modernism, would greatly assist the advance into Central Europe of the social-materialist values of the mature industrial era.

Therefore, in contrast to the shattered cities of Flanders in 1918 such as Ypres and Arras, that were rebuilt under a somewhat more conservative value system than what existed in 1945, a physiological chasm now appeared within the ruins of Dresden between those who still believed in the historic and cultural values of the destroyed baroque centre and contemporary political attitudes now common throughout Europe that wished to reconstruct destroyed towns and cities as cloned monuments to the imminent socialist millennium. For the first time in modern European History, an applied philosophical concept was exceptionally at odds with existing built

environments. Whereas the defeated Third Reich had favoured a relative degree of vernacular continuity in its building programme, the Allied Victory in 1945 represented the political and cultural triumph of Modernism - and with that Modernist town planning - throughout the developed world.

At Dresden, the conflict between deeply entrenched feelings for the historic, organic integrity of the city and the forces of radical, ideological urban change within a region that would soon become the new German Democratic Republic was especially intense.



Figure 1. The commercial centre of Dresden c1950

The wide extent and thoroughness of the destruction made the broken remains of central Dresden, an arena of exceptional conflict as to what values the new Dresden would represent and what form it should take. At stake were two major issues. Firstly, how far could Modernist planning principals, which emphasised spatial linearity and social conformity, could be used as a substitute for the complete replacement of preindustrial townscapes of considerable architectural distinction and originally built to make manifest totally different cultural values. Secondly, was the extent to which widely accepted hygienic and other physical improvements to the urban fabric should or should not be used to justify major alterations to the intrinsic character of entire historic districts.

It was in the end a question of whether greater value was put on the evolved, aesthetic and pluralistic qualities of Dresden as a whole, or whether ideological, utilitarian considerations in respect to every aspect of life in the city were to be given primacy of place. Certainly within the more polarised circumstances of post war Germany, there could be little or no compromise between Dresden's cosmopolitan, leisured past and the more down to earth values of Really Existing Socialism. The possibility of an eventual synthesis between a reconstructed City Centre and the outer areas being rebuilt in a more modern form - given the gaping breach between urban conservation and town planning that existed during this period - was a non starter.

Consequently, parallel to a residual longing for - amounting at times to physiological trauma - the Old Dresden that had vanished in 1945, most inhabitants had only the vaguest idea as to how Socialist planning principals would be imposed on their city by their new Communist masters. In effect, the very idea and soul of Dresden was at stake. In the first Structure Plan (1950), in keeping with the then current socialist beliefs that the prime function of urban areas was to serve their own communities, an outer ring of self sufficient residential areas was proposed, together with a rebuilt commercial centre and a deliberately low density townscape devoted to cultural, educational and leisure purposes on the site of the old historic heart of the city. There, the chief features would be a much enlarged Alt Markt ( the main square of the old town) for political demonstrations and the division of the Old Town into two halves by an extremely wide thoroughfare - the so called Magistrale. In addition a so called 'peoples palace of culture' would be constructed symbolically on the site of some of the finest town houses in the city between the Alt Markt and the former Royal Palace.



Figure 2. Model of the new centre of Communist Dresden c1953

And yet this ideological hatred of the old regime was still tempered by the urbane ghost of the vanished baroque heart of Dresden - because every surviving inhabitant knew that once reconstruction along new lines began, the chance of recreating many of the exquisite architectural perspectives that had survived until 1945 would be gone for ever. This hesitancy to come to a final decision is shown by the detailed proposals submitted for the revival of the historic centre; nearly all of them incorporated an ambience of the street structure of the destroyed townscape. Eventually, as a result of the consolidation of socialist planning principals within the German Democratic Republic in the 1950's, it was decided that no pretence should be made in perpetuating any lingering influences from the past. Henceforth the greater part of the remaining evidence of patrician Dresden would be erased.

Accordingly, not only did private owners of surviving war damaged properties experience great difficulty in obtaining funds for their reconstruction, but the spatial structure of the city centre was radically altered by the sequestration of private building plots for grandiose new developments. In addition, many fully restorable historic buildings, amounting to over 2000 damaged facades, were deliberately destroyed, often at night, in spite of the heroic efforts to save them by the State Conservation Services. Indeed this bitter conflict between the forces of conservative rebuilding and radical change was symbolised by the personal clash between the distinguished art historian Fritz Löffler and the forceful Communist Mayor of post war Dresden, Walter Wiedauer over the moral legitimacy of what should happen to the built environment of the city.

The strained circumstances of the rebuilding symbolised the wider cultural conflicts that assailed post war reconstruction throughout Germany - and in particular the extent to which its reconstituted civic traditions should be guided as much by older, humanistic traditions as by the prevailing new social materialism. Until the early 1970's, ideologically driven booms in both parts of divided Germany and involving relatively unsophisticated rival forms of consumer enrichment, precluded any positive co-operation between town planners, conservationists and politicians as to how conflicting aesthetic and social considerations in cities should be effectively synthesized in built form. Indeed strengthened by the breathing space offered by the 1961 Berlin Wall, the next 15 years saw the climax of fully fledged, modernist rebuilding. In contrast to the more traditional designs of some of the earliest, residential rebuilding schemes and the attempt to emulate to some degree in the Alt Markt and its surrounding on a larger scale, some of the principal elements of Saxon domestic architecture from the eighteenth century, the introduction of industrial building techniques in the 1960's led to very considerable changes of scale - quite apart from the drastic alterations in the basic spatial structure that were already being put into effect - in respect to the new townscape of post war Dresden.

Not only did new high rise settlements arise on the outskirts of the city, but more ominously, 12 to 17 storey blocks of flats now appeared immediately to the west and south of what remained of the historic city centre. This new and to many, abrasive skyline, which greatly altered the previously fully integrated, aesthetic relationship between the city and adjacent riverine landscape encapsulated the increasingly alien impact of unalloyed Socialist planning in Dresden and other East German cities by the early 1970's. Indeed the 1967 Dresden Structure Plan represented the peak of this ideological high rise mentality and envisaged the entire inner city composed of monumental pieces of townscape which would have no resemblance whatsoever to the original spatial structure of the area. By the late 1970's, even though financial constraints prevented the completion of all the projects that were originally contemplated, it had become possible to date the rebuilt, modernist sections of Dresden by stylistic characteristics alone.



Figure 3. Model of the rebuilt centre of Dresden c1982

The Communist elite really did believe that each new project built at that time was a perfect socialist achievement and a fitting compliment to what remained of the old historic centre. In the 1980's, the latter still consisted of large green spaces where the magnificent town palaces of Dresden had once stood and only interrupted the gaunt ruins of the Frauenkirche and the former Royal Palace.

The considerable differences of scale and architectural form within the built and unbuilt parts of the inner city vividly demonstrated that the Communist authorities had palpably failed to create a viable urban synthesis from surviving and new architectural and town planning conceptions. Instead they had created according to Dr. Jürgen Paul, 'a banal, aesthetically boring even downright dull city.'

But while the citizens of Dresden were suffering the results of a now plainly failing and self-serving revolutionary experiment, increasing resistance to the general inadequacies of Modernist town planning was steadily growing in West German cities and indeed throughout Western Europe. The wider culture value of urban environments in comparison to their absolute commercial or social importance now became for a new post-war generation, increasingly relevant. Moreover, after the highly successful European Architectural Heritage Year held in 1975 and an increasing re-evaluation of German cities such as Nuremberg and Munich which against all odds had been rebuilt in a more traditional manner, the popularity of German regional vernacularism now began to emerge from the

shadow of the Third Reich. Greater tolerance for the interplay of aesthetic, social and economic considerations in urban contexts allowed conservation and planning to become again complimentary disciplines in West Germany. A spontaneous social planning movement, New Urbanity, campaigned for the reestablishment of plural life styles in central urban areas in place of functional zoning and thereby enabled exceptional restoration/reconstruction schemes - as in Augsburg and Hildesheim - to take place.

Not surprisingly, these urban enhancement schemes seen on television by millions in the German Democratic Republic, had a considerable destabilising effect on the ruling Communist elite. By being forced eventually to allow the reintroduction of more visually and socially appealing 'bourgeois' architecture in order to satisfy the growing demand in Eastern Germany for a more individualistic, less ideologically orientated, life style, the basis of the legitimacy of the German democratic Republic now came into question. Although some attempts were made to improve architectural and conservation standards in Dresden, 40 years of unalloyed social materialism and rigid government control had made it impossible for planners to produce good, modern, organic designs for the city centre. The last Communist Structure Plans for Dresden (Michalk 1986, Burgraf 1990) still exhibited too great a degree of functional zoning and a total inability to synthesise effectively the historical and more modern parts of the city.

Soon after the reunification of the two Germanies in 1990, a total stop was put on further development, and a very extensive debate was begun on the future concept and appearance of Dresden. According to a 1992 Opinion Poll, while most respondents wanted all the conveniences of modern urban life, they also believed that Dresden should still aspire to the idea of the great Gesamtkunstwerk (integrated work of art) that perished in 1945. This was the vital question: to what extent was it still feasible in the Post Modernist Era to make real again much of the vanished magnificence of the pre-war city while at the same time ensuring that the new townscape was flexible enough to accommodate the greatly changed physiological priorities of the modern urban world? Was the very uniqueness of Dresden encapsulated in the studied reluctance of its inhabitants to accede to the more conventional life styles of most other large cities in Central Europe? After much discussion, it was accepted that central Dresden should be regarded henceforth as a stage set (Bühnenbild) within which the fusion of its built environment and the activities of its inhabitants would be unequivocally related to each other.

This concept could however only be sustained by a harmonious synthesis between the riverine landscape of the Elbe and the spatial order, perspectival originality and architectural distinction of the Old Town as they have evolved during the Eighteenth and Nineteenth Centuries. This is involving not just a recreation of former patterns of built open space but the re-establishment of a more integrated mix of commercial, service, leisure and residential uses within the inner historic area. These new developments would also set the scale for linking structures between surviving elements of the original townscape and for the reduction by new, strategically placed structures, of the visual impact of poorly integrated, high rises. Therefore since according to the 1992-94 era Structure Plan for Dresden, it is impossible to re-establish fully the former Gesamtkunstwerk, then an urban environment of complimentary visual segments is considered a fitting substitute.

Therefore, the principal streets and squares of Central Dresden are being reinstated generally according to historic building block dimensions which will also have the advantage of providing a spatial common denominator for the great variety of Neo-modernist architectural designs that are being allowed beyond the inner city. For while more traditionally replicated architectural characteristics in the very heart of Dresden are considered more appropriate for its

revived function as a major administrative, cultural and service centre, a greater degree of design latitude cannot be entirely avoided in the principal commercial area now being constructed adjacent to the Old Town and in high tech industrial developments further out.



Figure 4. *The Great Model 1995: the denser shapes showing proposed new buildings*

In respect to the reconstruction of the Old Town itself, which to the wider world is the very symbol of the world famous visual silhouette of Dresden, the necessity of recreating there a highly developed, pluralistic tourist centre, has made it all the more essential that the final appearance of this area - mainly between the former Royal Palace, the Alt Markt and the Neumarkt - should be able to serve as the ultimate standard of good civic design for the entire city. The recreation of this area which before 1945 contained the most outstandingly beautiful streets and squares in the Old Town, is being helped considerably by the survival at strategic points of some of Dresden's most famous buildings such as the Taschenberg Palace, the Catholic Cathedral and above all the principal Lutheran church in the city, the Frauenkirche. These monuments - together with the reconstructed Royal Palace - will be incorporated into a new integrated townscape encompassing concepts of aesthetic neutralisation, remodelling, reconstruction and where necessary outright demolition.

Thus in the main square of the Old Town, the Altmarkt, its missing southern side - which is being recreated in simplified, traditional urban form - will effectively screen the Old Town from the modern commercial centre to the south while the north side of the Altmarkt will be improved by a more sympathetically designed extension to the existing Palace of Culture; thereby also helping to reduce the excessive width of the Magistrale, the unloved road that divides the Old Town in two. However, the Neumarkt, the very heart of patrician Dresden is now being rebuilt very much along the lines of its original appearance by recreating the original, historic street pattern and by the coherent harmonisation of the principal facade elements of the square including roof pitch, fenestration patterns and doorways.



Figure 5. *Plan of the Neumarkt showing the areas that will eventually be rebuilt*

But while the finest town palaces are well documented, the plainer houses are known only from old photographs and cellars. Under such circumstances, it has been asked, should every pre 1945 structure be reproduced; if not, what sort of design criteria should

relate the various elements of the reconstructed Neumarkt to each other? Certainly, a comparison of the Neumarkt in the mid-eighteenth and late nineteenth centuries shows very considerable differences in form and scale. It is also clear that the greater height and mass of the later buildings (those that were destroyed in 1945) demonstrate a better overall spatial balance for the entire square.

It has therefore been decided by the City Council that certain outstanding pre 1945 creations should be completely reconstructed and become design pointers for the general shape size and decorative adornment of the linking pieces of townscape in between. The problem is to what extent the buildings that are not designated design pointers should reflect the general appearance of whatever stood on these sites before 1945 or whether their replacements should encompass simplified elements of the vanished originals in a more modern guise.

The present differences between supporters of a more authentic reconstruction of the Neumarkt (including over 80 reconstructed facades) and the Modernist architectural lobby which favours a less complete reconstruction of the Neumarkt is still very much a continuing point of conflict. At present, and to a considerable degree as a result of strenuous efforts by the Gesellschaft Historischer Neumarkt, a lobby group founded in 1999 to encourage 'a careful reconstruction of the living heart of the city,' the present two major reconstruction projects either side of the Frauenkirche and the newly rebuilt Hotel de Saxe just beyond, have not only rebuilt all designated design pointer buildings but also a fair number of the linking structures in either fully traditional or somewhat simplified form.

However, irrespective of continuing problems over design details of further sections of the Neumarkt, still to be rebuilt, there is no doubt that the main catalyst for a more authentic rebuilding of the entire area has been the triumphant completion of the magnificent Frauenkirche in 2005 - an amazing combination of Italianate architectural form and German linear virtuosity - and the most potent symbol of the entire city. Indeed now that the famous sky line of Dresden from across the Elbe is again complete, the entire riverine landscape at Dresden and for several kilometres either side has been designated a UNESCO World Heritage Site. This is a fitting tribute to untiring efforts made since 1990 to revive the sorely degraded natural and manmade beauties of this unique region.

But this achievement, especially as it relates to Dresden itself, is also a reflection of the extent to which the visual appearance and structural function of a particular place made up of varying proportions of original restored buildings, the reproduction of destroyed originals and buildings of more modern design, depends on the levels of moral and material meaning read into such creations according to particular circumstances. The varying balance of different types of townscapes and architectural forms in Dresden or indeed anywhere else, are directly related to whatever measures are considered necessary to sustain an acceptable degree perceived authenticity in the achievement of a viable civic concept and a distinctive Sense of Place that will prevent Dresden from becoming neither a sterile monument to Neo-Modernism nor a Disneyland on the Elbe will be the sustained commitment of her inhabitants to combine a mature level of historical perspective with a healthy instinct for social regeneration - in which the demands of the contemporary world are interpreted through the evolved traditions of her incomparable past.

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Useful websites: [www.neumarkt-dresden.de](http://www.neumarkt-dresden.de)

(Replies to: John Soane, 8 Fountain Court, Durely Gardens, Bournemouth BH2 5H2, United Kingdom. Tel: +44 (0)202 290 770)

## ENGINEERING TIMELINES - CALL FOR CONTRIBUTORS (CLARE SIMS)

Our site, [www.engineering-timelines.com](http://www.engineering-timelines.com), is a web-resource on engineering history in the UK. Our database holds hundreds of entries on engineering heritage sites. Users can search different categories to create a timeline of engineering history on a specific theme - an engineer, a period in history, a type of structure. Hyperlinked dots on a map click through to individual site descriptions with illustrations.

There are a number of subject areas we hope to develop further including:-

Scotland  
dams  
airfields and flight engineering  
amusement structures  
harbours, harbour piers  
mining  
power stations  
significant road construction  
stadiums/arenas/pools  
canals/roads/railways  
more biographies on individual engineers

But we would be open to any suggestions from potential collaborators.

Our ambition is to create a definitive online resource for engineering heritage that has a wide audience appeal - anyone from students to historians to tourists should enjoy the site. Our contributors do receive payment.

For more information please contact:-

Clare Sims  
Development Coordinator  
[www.engineering-timelines.com](http://www.engineering-timelines.com)  
Tel: 0208 341 9565  
Mobile: 0776 1111 325

## CONFERENCE - CONSERVATION OF BUILDINGS, LONDON 8<sup>TH</sup> JUNE 2006

The Conservation of Buildings Conference will be held at the Marylebone Campus of the University of Westminster on Thursday 8 June 2006. The conference is organised by the CIOB and the University of Westminster and aims to give you the opportunity to get practical advice on managing building conservation projects.

Listen to experts on funding, contracts, skills and the political process impart their knowledge and wisdom. Get to grips with the management issues that can make a real difference to the success of a project.

For further information please contact: Szilvia Galambos, University of Westminster, 35 Marylebone Road, London, NW1 5LS, Tel: 0207 911 5000 x3220, Fax: 0207 7911 5171, Email: [galambos@wmin.ac.uk](mailto:galambos@wmin.ac.uk), or visit the conference website at [www.buildingconservationforum.co.uk](http://www.buildingconservationforum.co.uk)

## FAREWELLS

Hentie Louw - Chair of the CHS

Dr. Hentie Louw announced at the recent AGM his intention of



standing down as Chair of the Construction History Society. Hentie has been Chair of the Society for 4 years and was previously Vice Chair for 2 years. Hentie has served the Society extremely well. Under his tenure the Society has grown to become internationally recognised as a centre of excellence and expertise and Hentie was intimately involved in encouraging and organising the largest event the Society has every organised - the Second International Congress on Construction History. Hentie has been a loyal member of the Society and regularly travelled down from Newcastle to attend CHS Committee meetings and events in London. He will be a hard act to follow. We all wish Hentie well in whatever future direction he decides to take.

#### **Malcolm Dunkeld - Vice Chair and Editor of the CHS Newsletter**

Malcolm Dunkeld has announced his intention of standing down from the CHS Committee and as Editor of the Newsletter. Malcolm is the longest serving member of the Committee and has been editing the CHS Newsletter for the past 3 years. His most demanding role has been as Chair of the Cambridge Congress organising committee, which has been planning the Second International Congress on Construction History for the past 2 years. Malcolm says that he would like to focus on research and hopes to publish a book on construction history in the near future. He will remain a member of the Society and will help with its activities in whatever way is considered appropriate.

#### **Peter Longley - Treasurer of the CHS**

The CHS Committee and the members of the Society would like to extend their thanks and gratitude to Peter Longley who retired as Treasurer earlier this year. Peter is a founder member of the Construction History Society and served many years as a Committee member before taking over as Treasurer in 1998/99.

Over the years Peter has been a great supporter and has given dedicated service to the Committee and it is certain that he will continue to remain interested in the Society and its future. We all wish Peter and his wife a long and happy retirement together.

## **NEW EDITOR OF THE CHS NEWSLETTER**

Dr. Nina Baker has been appointed as the new editor of the CHS Newsletter following the retirement of Malcolm Dunkeld. Nina is

based in Glasgow, Scotland, where she is researching the history of women in the Scottish building industry and the historical involvement of women in engineering in the UK. She also runs a programme to encourage women to return to science and engineering careers. Her PhD was on the durability of high alumina cement in marine applications. Her previous career was varied, starting with 7 years at sea with the merchant navy.

We all wish Nina every success with the editorship of the Newsletter.

Her contact details are:-

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tel: +44 (0)141 548 3017 (postgraduate room)

## **URGENT REQUEST - CONSTRUCTION HISTORY JOURNAL VOLS. 1 TO 7**

Michael Tutton (Secretary CHS) urgently requires volumes 1 to 7 inclusive of the Society's Journal *Construction History* for indexing purposes. Anyone willing to lend/donate/sell these volumes should contact Michael Tutton on Tel: 07957 845508 or e-mail: [michael.tutton@virgin.net](mailto:michael.tutton@virgin.net)

## **NOTE FOR DIARY - OPEN HOUSE LONDON ANNUAL EVENT: 16-17 SEPTEMBER 2006**

The Capital's biggest architectural event where London is turned into a living exhibition for 48 hours, is all about seeing, experiencing, exploring and understanding architecture, engineering and design. In total, 500 contemporary and historical architecturally significant (and often private) buildings will open their doors to the public, offering direct experience of London's built environment in a celebration of design excellence.



*Institut Francais in Kensington*

The success of last year's event saw unprecedented interest and huge enthusiasm for taking part with an estimated 360,000 visits to buildings across the capital including private residences, government buildings, contemporary offices, historical houses, arts spaces and Institutions, City banks, medical centres and schools. All access is completely free of charge.

In addition, the Open House *OpenSite* programme (in association with the Association for Consultancy and Engineering) has enabled the public to view future London by visiting some of the major projects still under construction such as Wembley Stadium, St Pancras International and Terminal 5, Heathrow. In our "Meet the Makers" programme, engineers and architects will be on hand in many of the buildings this year to answer questions about construction and design.

Victoria Thornton, Founding Director of Open House, comments: *'experiencing a building in the flesh - inside and out, can help you understand it, assess it, in a way you never could from a picture. If Open House can get Londoners to care passionately about their city and its future buildings, we will really have achieved something'*.

The *Buildings Guide* will be available from mid August by visiting [www.openhouse.org.uk](http://www.openhouse.org.uk) Information Line: 09001 600 061 (60p p/min) or visit [www.openhouse.org.uk](http://www.openhouse.org.uk)

Project supporters include 32 London boroughs, BBC London, RIBA, [multimap.com](http://multimap.com)

The Open House organisation is an architecture education charity whose work throughout the year promotes public awareness, education and debate of architecture and the built environment. Registered Charity No. 1072104

## ARCHITECTURE WEEK - 16-25<sup>TH</sup> JUNE 2006



## FORTHCOMING CHS EVENT

The *Construction History Society* in association with *the Society for the Protection of Ancient Buildings* is holding a one-day course titled 'Conservation of Historic Plain Glazing' to be held on the 4<sup>th</sup> September 2006 at the Ashcroft Museum of Historic Buildings, Bromsgrove, Worcestershire.

Price: £85.00 (including lunch).

The following topics will be covered:-

History and development of glass; principal types of window glass and their characters; repair techniques; associated materials, repairs

and maintenance; cleaning plain glass; simple precautions to assist with the conservation of historic glass.

For more details contact Douglas Kent, Technical Secretary, The SPAB, 37 Spital Square, London E1 6DY, e-mail: [douglas@spab.org.uk](mailto:douglas@spab.org.uk) or to Michael Tutton at e-mail: [michael.tutton@virgin.net](mailto:michael.tutton@virgin.net)

## TENTH ANNIVERSARY OF THE CIRCA TRUST (JOHN KEENAN)

It is with great pleasure that as Honorary Curator of the CIRCA Trust collection at Stroud I would like to invite members of CIRCA & WICCAD, the Construction History Society and the Tools and Trades History Society to join us to celebrate the Tenth Anniversary of the CIRCA Trust. We have arranged for a series of day long tours between Saturday, 17<sup>th</sup> June and Sunday, 2<sup>nd</sup> July involving a visit to the CIRCA archive and various visits on the theme of 'Stroud and the work of the Arts and Craft Movement'.

Members of the Construction History Society are invited to participate either in group parties of 6-8, 12-16 or 18-24 or as individuals joining an open tour. Larger groups will be split.

The weekday itinerary will be (adjustments being made for train times as necessary):-

- 10.15 a.m. Non train visitors leave Mill (Stroud friends will transport)
- 10.30 a.m. Walk 1 - arrive Stroud Station (8.30am from Paddington). Wool walk along Stroudwater Canal to Dudbridge via Lodgemoor Mill, Fromehall Mill and Dudbridge Canal Wharf crane.\*
- 11.15 a.m. Morning coffee
- 11.30 a.m. Archive 1 - outside of the mill, its archaeology and the materials library.
- 12.30 p.m. Break for lunch at a local pub. Walk 2 - going via Cainscross Tollhouse, local Arts and Crafts Vicarage. Returning via cast iron columned parish church and the Bodley extension to Ebley Mill \*
- 14.30 p.m. Archive 2 - the archives and the CHS collection
- 15.30 p.m. Afternoon tea
- 15.45 p.m. Tour 1 - the Marling legacy, Stanley Mill (Iron framed brick fireproof construction), Bodley's Selsley Church (William Morris stained glass)\* (Stroud friends will transport)
- 17.35 p.m. Leave for station (Stroud friends will transport)
- 17.52 p.m. Depart Stroud Station (7.32pm at Paddington)

\* Arrangements have been made for those with walking difficulties to be transported by car to the mills, vicarage and churches etc.

The cost of the visit including morning coffee, afternoon tea, pub 2 course meal, transport by car to Selsley and station (train fare excluded):-

CIRCA & WICCAD

£18

CHS & TATHS members

£20

Non Members

£23

For more information contact: John Keenan Tel: 07966 227575;  
correspondence address - Kimmins Mill, Meadow Lane, Dudbridge,  
Stroud, Glos GL5 5JP

## WORK PLACEMENTS AT CIRCA (JOHN KEENAN)

After discussions with delegates at the recent Cambridge Congress, the following work placements scheme is announced at CIRCA (tailored to architecture, building, conservation, archaeology and engineering):-

### Leonardo Plus

The Archive Centre at Stroud has offered 'Leonardo' English speaking work experience for under eighteens since 2004. It is now proposed to offer a specialist 'Leonardo' twelve week course/work experience in architectural and building conservation matters for adult students.

The course will consist of seven modules (of two weeks each):

#### Module

*English I* Spoken English including one-to-one tutor sessions.

*Work Experience* One module with five of the following - architect, building contractor, consultant engineer, surveyor, planner, historian/ researcher and archaeologist.

*English II* Written English and preparation of report

#### Accommodation

Each student will be placed with a host family, only one student of each mother tongue per family.

#### Study groups

Each group will include six to eight students, in order to provide greater scope for tuition and to experience realistic English family life.

#### Weekend group visits

During work experience, one day site visits, returning to host family. Visits include:-

Bath +  
Bradford upon Avon + Saxon Church + Castle [EH]  
Bristol + Brunel's SS Great Britain  
Cardiff + Castel Coch [C]  
Chepstow + Tintern Abbey [C]  
Cirencester + Dry stone quarry  
Clevedon Pier + Tyntesfield House  
Frome + Radstock + Castle [EH]  
Forest of Dean + Brickworks  
Oxford + Steam Centre (Brunel's Great Western)  
Salisbury + Stonehenge [EH]  
Shaftsbury + Castle [EH]  
Swindon + Railway Museum + Castle Coombe  
Wells + Glastonbury Abbey & Tor

Weymouth + Portland stone quarries

Between modules - long distance site visits staying where possible in architecturally interesting guest houses

Brighton - Dover Castle + Chichester + Portsmouth Docks  
Durham - Springwell gravity railway (Stevenson) + Newcastle + York  
Dartmoor - Truro + Eden Project + Dartmouth + Exeter  
Lavernham - Cambridge + Norwich  
London - Chiswick House + Eltham Palace + Darwins House  
Ludlow - Shrewsbury + Stokesay Castle + Much Wenlock Abbey + Ironbridge + Severn Valley Railway  
Ruaban - Llangollen + Vernwry Dam  
Chester - Liverpool + Angelsy

These visits will also provide time-off for recreation, shopping, sports etc. The above venues can be arranged on a general theme, architectural or engineering. The first trial of the new course will be from 24<sup>th</sup>/25<sup>th</sup> June to the 9<sup>th</sup>/10<sup>th</sup> September 2006. Following which it is hoped to arrange similar courses each year from the middle of the month:

September to December  
January to April  
May to August

Other work placements may be arranged with the Centre, which will allow the student time to carry out research, and take part in the Leonardo visits.

For more information contact: John Keenan, Tel: 07966 227575.  
Correspondence address: CIRCA & WICCAD, Kimmins Mill,  
Dudbridge, Stroud, Glos. GL5 5JP, United Kingdom

## 'RECENT SCHOLARSHIP AND BEST PRACTICES ON HISTORIC BRIDGES' TICCIH-TERNI, ITALY, SEPTEMBER 14-18, 2006 (ERIC DELONY)

It has been suggested that TICCIH (The International Committee for the Conservation of Industrial heritage) form an historic bridge/public works special interest group. TICCIH is a global organization which has been in existence for over 30 years promoting preservation, conservation, investigation, documentation, research and interpretation of our industrial heritage. To this end TICCIH hopes to sponsor an historic bridge session at the TICCIH congress to be held in Terni, Italy, September 14-18, 2006, where not only a series of presentation will be made on current historic bridge scholarship and best practices, but the formation of a special historic bridge/infrastructure/public works special interest group. Anyone wishing to share their ideas and support for formation of such a group, please contact Eric DeLony, Pontist@Comcast.net, or the TICCIH office, [ticcih@gencat.net](mailto:ticcih@gencat.net)

Replacement and rehabilitation of old bridges has stimulated interest in their preservation and history in the United States. In the US, recent statistics suggest that half, if not more, of America's historic bridges have been lost in the last twenty years - two decades during which transportation and preservation consciousness was at the highest level. I'm sure that similar interests exist in other countries though my sense is that the situation may be better off abroad.

Transportation always has had significant impacts on the historic built environment in countries throughout the world. For over a

quarter of a century, industrial archeologists, preservationists, citizen groups, consulting engineers, highway officials and federal transportation authorities have been grappling with the rehabilitation or replacement of historic bridges.

## BOOK REVIEWS

JAMES W.P. CAMPBELL

Julie Decker and Chris Chieci (eds.)

### QUONSET HUT: METAL LIVING FOR A MODERN AGE

166pp., over 150 illustrations, hardback. Princeton Architectural Press, New York, 2005. £15.99 ISBN 1 56898 519 3

Many would still argue that the Quonset Hut has no place in an architectural history, yet on reading this book its relevance to the history of building construction is immediately clear and it thus provides an elegant demonstration of difference between the two subjects and the narrowness architectural history. The term Quonset Hut is probably not well known outside its North American natural habitat but everyone would recognise one on sight. It is the name given to the barrel-vaulted corrugated-steel temporary buildings that were built by the hundreds of thousands during the Second World War for the American armed forces and then after the war as temporary homes. The design was directly derived from the "Nissen Hut" invented in the First World War by British army officer, Peter Nissen (1871-1930) whose story was told in Fred McCosh's, *Nissen of the Huts: a Biography of Lt. Col. Peter Nissen DSO*, BD Publishing, Bourne End, Bucks ISBN 0 9525799 1X. Nissen came up with the idea for his hut in 1916 while fighting in the trenches at Ypres. Its potential was immediately realised by his superiors, he was posted away from the front to develop it further and the British Government even allowed him to patent his invention. Nissen later claimed that he had based his idea on a drill shed at Queen's University, Kingston, Ontario which photographs show was a large barrel vaulted structure. That structure had collapsed in 1880, unable to withstand snow loading. The Nissen Hut he designed was more sturdy and proved a great success in providing temporary shelters for military personnel all over the world, but Nissen's later attempts to profit from his invention and adapt it for civilian use were less successful and he died in 1930 over a decade before the first Quonset Hut was conceived.

The Quonset Hut, rather than the Nissen Hut, can trace its origins to the Second World War when in March 1941 the American Navy formed a team of architects and engineers to oversee the design and mass production of prefabricated buildings for America's bases overseas. The team were sent to Quonset Point, Rhode Island, the base chosen for the production and shipment of the buildings and supplies to newly planned base overseas. They were ordered to start with the Nissen Hut and see how it might be improved. The modifications they made were arguably quite minor: they were chiefly improvements in the structure and simplification of the process of assembly. Perhaps realising that there might be problems with patents, an order was thus given in July 1941 that the resulting designs should be known as "Quonset Huts" and thus the Quonset Hut was born.

The book, *Quonset Hut* sets out to provide a history of the building type and its uses. It is the result of a research project sponsored by the Alaska Design Forum and is very much a collaborative effort. Its format is the edited volume, each chapter being written by a contributor and the chapters arranged in roughly chronological order. This format is never ideal and thanks to differing writing styles and interests the book reads more as a collection of articles or an exhibition catalogue than a continuous narrative. Perhaps in its

defence it should be noted that the subject presented particular difficulties. While McCosh's book on Nissen is a biography and could use human interest to drive the story forward, the authors of the Quonset Hut were faced with something that was designed by committees and corporations. Individual contributions were hard to trace and relatively few biographies appear. It thus comes across as a history of things rather than people. Having said that it should be pointed out that McCosh's book on Nissen is also frustrating as its focus on the man not the building, leaving the story of the contribution of the British Nissen Hut after Nissen's death in 1930 untold. In that sense the Quonset Hut is a much better study and of far more interest to the construction historian.

The *Quonset Hut* starts with Nissen and follows the complete development of the form to the present day. Furthermore, while McCosh's book is relatively poorly illustrated to keep costs down, the *Quonset Hut* is worth purchasing for the illustrations alone, which include archive photographs of the buildings in use and erection, original working drawings, cartoons and advertisements. It is of little surprise that the book was accompanied by an exhibition and it feels very much like a rather lavish exhibition catalogue. As the Quonset Hut itself was a relatively simple structure, the drawings supplied are adequate to understand both its detail and how that changed over time although this development is most easily understood from an excellent appendix in which all the variants of the Hut are shown in thumbnails with short descriptions to allow easy identification.

In conclusion, this book provides a fascinating (if sometimes frustrating) insight into one of the most important examples of prefabricated construction in the twentieth century. For those already expert in the field it will no doubt suggest new areas of research while for the rest of us it tells us everything we will probably ever need to know about the subject.

HERMIONE HOBHOUSE

Patricia Spencer-Silver

### TOWER BRIDGE TO BABYLON: THE LIFE AND WORK OF SIR JOHN JACKSON, CIVIL ENGINEER

232pp. Six Martlets Publishing (for the Newcomen Society) 2005; £28 ISBN 0-9544856-1-0

Sir John Jackson (1851-1919) was, in the words of his Times obituary, 'One of the greatest of the British engineers and contractors whose work in many parts of the world is typical of contemporary civilisation'. The author, however, has done more than tell his story; through the life of an engineering contractor who carried out a number of important contracts, including Tower Bridge and the Manchester Ship Canal, she has shed light on a very important period in the building and contracting industry. She describes the rise of a new breed of British entrepreneurs, who worked from Vancouver to Singapore, and from Liverpool to Cape Town.

Jackson was descended from a York silversmith, Edward Jackson, whose son William was apprenticed to his maternal aunt's husband, George Myers, known as 'Pugin's builder'. William Jackson trained in London, and in 1849, moved back to York, where he set up as a stonemason. He later moved to Newcastle, and it was in Newcastle that his son, John Jackson, was born. John served his apprenticeship as an engineer, and then went on to read engineering at Edinburgh University. He set up as an independent contractor in Newcastle in 1876 at the age of 25. He first worked with William Armstrong on the swing bridge at Newcastle, following this with several other local jobs. His first major work was Queen's Dock Glasgow, where he presented the lowest, tender and was able to agree a date to finish. The dock was duly opened by the Lord Provost of Glasgow in September 1880, over a year late. It was succeeded by a period of

arbitration, necessary to settle claims over late timing from the trustees, and from Jackson, late payment. Jackson won, and on the strength of the Glasgow job, was able to move to an office in London, in Victoria Street, the home of successful engineers until after the Second World War. His telegraphic address was cofferdam, apposite as much of his regular work at this time was in docks and harbours. As well as a number of smaller jobs, he worked on docks at Middlesborough, at Seahouses in Northumberland, and at Wicklow Harbour, 30 miles from Dublin. A contract which was contentious for a number of reasons was that for a sea-wall at Eastbourne, which brought Jackson, as the contractor, into conflict with the major landowners, the Duke of Devonshire, and Mr. Gilbert of Trelissick in Cornwall, and with the local fishermen, whose landing place, and therefore their livelihood, was threatened.



*Sir John Jackson 1851-1919*

Much of the dock and bridge engineering works were necessitated by the increased size of shipping, and the tall masts of sailing ships. An example of this was Tower Bridge, where the much needed land crossing could not be allowed to obstruct entrance to the port of London, then sited below London Bridge. The matter was one for the Corporation of the City of London, for whom Sir Horace Jones designed the low-level bascule bridge with its eye-catching Gothic towers. In 1885, Jackson won the contract for the abutments, and the lower parts of the piers, his first major contract in London, since he had moved his office there. He went on to build the northern approach road and to supply some of the metalwork. As in most instances, a detailed account is given of how the caissons were sunk in such a busy and difficult site, and there are some spectacular photographs of work in progress.

One of the contracts which won Jackson this prestigious job was a less spectacular but even more demanding one - one of the significant engineering achievements of the late nineteenth century - the Manchester Ship Canal, which enabled that city to continue to grow and flourish despite its distance from the sea - and Liverpool's

He followed these jobs with work on the Dover Harbour, important both as a naval base and as a commercial harbour owned by the London, Chatham and Dover Railway, and in South Wales, where the development of the coal mines, was followed by the extension of the docks. Jackson worked at both Swansea and Barry, where again resort was had to arbitration. This appears to have happened frequently with Jackson, possibly because his university training made him more able to argue his case. However, as Spencer-Silver points out, these cases often arose because of the difficulties of anticipating the physical obstructions which could crop up when large excavations were involved, and also due to the lack of independent arbitrators.

opposition. It is 36 miles long, and involved crossing a large number of routes - river, road and rail. The contract was awarded to a well known local contractor, who died four years later. When the rest of the work was put out to tender, Jackson took over several sections, and completed them on time, apparently because he had more suitable machinery - such as the English steam navvy, a mechanical excavator - rather than the lighter foreign machines.

Most of the heavy work at the time was carried out by rail related machinery, and it was a period of innovation, and of international competition in the development of civil engineering techniques. These are well illustrated by maps and diagrams, as well as by photographs. His success was also due to engineering techniques devised to meet individual problems. The other key to success was dedicated management by well trained and reliable men running each contract. Each job involved the employment of hundreds of men, from engineers to day-labourers, in whose welfare Jackson took a shrewd and well-informed interest. In addition, the company had a diverse supply of machinery, railway engines, and even its own fleet of steamships, owned by his Westminster Shipping Company.

John Jackson was knighted for his work on the Manchester Ship Canal, but through another contract, that for the extension to the Admiralty docks at Devonport in 1895-1907, he entered public life in another way. That contract was very extensive comprising a tidal basin, a closed basin, and several dry docks, and the works took a long time. The extension to the Devonport dockyard was opened on 21 February 1907, by the Prince of Wales (George V), and Jackson marked the occasion by bringing a hundred top-hatted guests by special train from London.

He was by then well established with a house in Kensington, later moving to Belgrave Square, but, as he often did, he took a house near a significant contract. The country house at Pounds, outside Plymouth was the family's home for over ten years, and led to his standing as Conservative candidate for Devonport. He was defeated in 1906, but successful in 1910, sitting until 1918, though he does not appear to have found it necessary ever to make a speech in the House.

CHRISTOPHER POWELL

Tom Stacey

**THOMAS BRASSEY: THE GREATEST RAILWAY BUILDER IN THE WORLD**

36pp. Stacey International 2005; £5 ISBN 1 905299 09 5

This essay is unusual in being a celebration of the life of one man. The encomium is not a common form of our times: today we are too sceptical, too keen to spot flaws and to lift stones to be drawn to it. But Brassey's great-great-grandson has been undeterred by fashion. He has given us the works.



*Thomas Brassey 1805-1870*

We learn that Thomas Brassey was born in 1805, son of a Cheshire yeoman farmer. He went on to become the biggest contractor in the world, employing 80 000 or more men for the two decades from the later 1840s. He worked in 20 countries on four continents and amassed an immense fortune. He is said to have built about a third of Britain's railways extant in 1870, as well as major lines in such far-flung places as Denmark, Transylvania, Spain, Syria, Australia, Russia and Argentina. This amounted to well over six thousand route miles, not to mention assorted docks, the two mile tubular Victoria Bridge at Montreal, heavy works in India, interests in Brunel's *Great Eastern*, locomotive plants, water supply, telegraphy and so much more. At one stage he had built three quarters of the entire railway network of France. It was globalisation before our time. He died at the age of 65 in 1870.

Within a scope of 35 pages, exhaustive detail of Brassey's life and works is not to be expected. Enough space is found to tell the tale of his origins ('not noted as a scholar') and career beginnings. He started by helping a land agent and before long was bidding to build Penkridge railway viaduct. Not yet thirty, he was engaged on a part of the London to Southampton railway and within seven years he was beginning his breakneck expansion in France. His business strengths included an ability to understand and calculate the vagaries of rock, water and soil, an ability to pick and motivate the right men, and a strong nerve to deal with physical danger and business risk. Many times he teamed up with fellow contractors and engineers (in vol. 13 of *Construction History* David Brooke writes of one joint venture). Some of Brassey's contractual exploits in Canada are outlined, along with wartime escapades in the Crimea and in the Austro-Hungarian Empire. A quiet life it was not.

What towers above the engineering and construction achievements, themselves stupendous, are Brassey's human qualities. His virtues of quiet clear-headedness, enterprise and unfailing scruples are stressed again and again. So, too, is the intense loyalty which he engendered in everyone with whom he came in contact, not least his vast workforce of navvies. It is the personality of the man, more than the methods of his firm or the nature of its products, which lie at the centre of the essay.

The slim volume is not free of minor faults: Trollope certainly deserves his concluding 'e' to keep the party clean (p.3); surely 'sliver' and not 'slither'? (p.4); the standard railway gauge should read four feet eight-and-a-half inches (p.21); and '1969' must be a century too late (p.30). Nevertheless, Brassey's story has been told with forceful conviction and appropriate (maybe excessive) dynastic piety by Tom Stacey. He has written an easy, informative, even compelling, paean of praise to an, apparently, near faultless hero.

JAMES W.P. CAMPBELL<sup>1</sup>

Stanford Anderson (ed.)

ELADIO DIESTE: INNOVATION IN STRUCTURAL ART

272pp. Princeton University Press, New York, 2004. £27.72 ISBN 1568983719

Eladio Dieste (1917-2000) is still relatively unknown in architectural circles in North America and Europe, even though *Eladio Dieste: Innovation in Structural Art* is not the first monograph on the architect/engineer.<sup>2</sup> Dieste was an engineer by training but he ran a building firm which gave him greater control over construction than he would have had otherwise and he also acted to all intents and purposes as an architect although he himself eschewed the title. The fact that his work has been until recently so little known outside his home country can be put down partly to geography (Dieste was born, grew up and practised almost exclusively in Uruguay) and partly to his choice of material (brick) which the twentieth century tended to

see as somehow less modern (and thus less interesting) than concrete. As this book shows, his importance lies in his unparalleled mastery of the long-span reinforced-brick vault. His churches, petrol stations, warehouses and grain silos have vaults that appear to float on slender supports and span 150ft with cantilevers of up to 50ft all done with brickwork usually only one (or at most two) bricks thick. It will thus be of interest to all those construction historians interested in the history of vaults and reinforced masonry construction.

This particular monograph grew out of a symposium held at MIT in 2000. Such volumes are frequently disappointing but Professor Anderson has here managed to arrange the various resulting papers into a very well-rounded book which is the most comprehensive volume on Dieste to date and the book to buy. It begins with an introductory essay by Anderson.<sup>3</sup> Dieste's son then provides a commentary on a beautiful set of pictures of Dieste's house and reminisces on life with his father. This is followed by four essays, interspersed with stunning photographs and captions of all his major works arranged in chronological order. The first essay (again by the editor) is aimed presumably at architects, and makes the case for Dieste as an architect of outstanding merit, focusing on some of his more extraordinary churches.<sup>4</sup>

The second essay, by Edward Allen,<sup>5</sup> is probably of more direct interest to brick enthusiasts as it explains the relationship between Dieste's work and that of the Spanish engineer Rafael Guastavino (1842-1908). Guastavino was responsible for transporting the idea of Catalan vaults (also called "timbre vaults") to America, where he developed them using the methods of graphic statics developed by Karl Culmann in the 1860s. As Allen points out, Culmann's methods were also used on other materials by Gaudi, Eiffel and Maillart.

Professor Allen's article provides a useful introduction to Guastavino (who is less well-known in the UK than the US) and points out how his techniques relate to those used by Dieste (which is less than one might at first suppose). Guastavino employed Catalan vaults which are thin-vaults constructed of large flat bricks or tiles without centering held in place by quick-drying gypsum mortar. Allen points out that the gypsum mortar was not waterproof and thus had to be supplemented by thin layers of Portland cement. The vaulting system was used in Spain as far back as the sixteenth century and possibly earlier. Members of the Construction History Society will note that if Guastavino's structures had used Portland Cement that would have been an relatively early example of its employment and perhaps the first in this context. However, Allen does not explore this aspect, instead claiming that Catalan vaults traditionally used Portland Cement, which is clearly not meant but threatens to mar an otherwise interesting piece.<sup>6</sup>

Professor Allen is keen to point out that Dieste's vaults are not pure masonry structures in the traditional sense which is why - although they are thin - they have little structurally in common with the traditional timbre/Catalan vaults which Guastavino used. Dieste's vaults rely instead on steel reinforcement and have to be built with some centering. In this sense they are closer to reinforced concrete, a fact that he acknowledged; the bricks act as close-fitting aggregate. The characteristic thinness derives from Dieste's use of highly efficient shapes for the vaults and a new method he invented for prestressing the reinforcement. The extruded wire-cut hollow bricks he employed had the advantages that were that they were lighter than normal aggregate, more thermally stable, and readily available. This comparison with concrete is further illustrated by John Ochsendorf's essay<sup>7</sup> which goes on to compare Dieste with Eduardo Torroja (1899-1961), a Spanish engineer who also used reinforced-brick shells and places him within the context of other better-known designers who used thin-shell concrete. The last essay in the main body of the book, by Remo Pedreschi (author of the previous monograph) and Gonzalo Larrambeere,<sup>8</sup> categorizes the various structural forms Dieste employed, including his use of pre-stressing and shows how he

defended brick as a modern material.

It is worth purchasing the book for the appendices alone. They start with some short essays by the engineer himself, and black and white photographs show one of Dieste's vaults in construction. These are followed by a highly illustrated essay by Timothy Becker and Kent Anderson<sup>9</sup> giving step-by-step instructions on how to make Catalan vaults. This is one of the best accounts of their construction in English to date. Next there is an essay by Remo Pedreschi and Braj Sinhua providing a detailed account of the development of reinforced brickwork from Brunel to the present day. Pedreschi and Sinhua show how engineering research tends to happen in laboratories and pays little attention to innovative built works like Dieste's.<sup>10</sup> Interested readers will find this essay invaluable as a summary of twentieth century research into reinforced brickwork which promised a great deal but was rarely employed in practice. The account appears to be comprehensive for the twentieth century but its treatment of Brunel and other nineteenth-century pioneers of this type of construction is less convincing. The final two essays<sup>11</sup> look at problems with use of Dieste's technology in the future, particularly as it is now acknowledged that his designs are subject to problems of corrosion. The appendices end with maps and a chronological catalogue of his major works, together with a comprehensive bibliography.

There is no doubt that Dieste is interesting in his own right as a pioneer of reinforced brick vaulting, but *Eladio Dieste: Innovation in Structural Art* is far from just a simple monograph on the South American architect. In compiling it, Professor Anderson has managed to bring together an indispensable collection of papers which deserve space on the bookshelf of anyone interested in the development of masonry vaulting in general and reinforced brickwork in particular.

#### Notes

<sup>1</sup> A slightly different version of this review was published in *Information* (the Journal of the British Brick Society), 99 (Feb, 2006), pp. 25-27.

<sup>2</sup> The two previous monographs are: Remo Pedreschi's, *Eladio Dieste: The engineers contribution to contemporary architecture* (London: 2000) and Antonio Jiminénez Torrecillas's (ed.), *Eladio Dieste: 1943-1996* (Seville, 1996).

<sup>3</sup> 'Introduction', pp.13-17.

<sup>4</sup> 'Dance without effort or fatigue: the architecture of Eladio Dieste', pp.32-41.

<sup>5</sup> 'Guastavino, Dieste, and the two revolutions in masonry vaulting', pp. 66-75.

<sup>6</sup> Perhaps they used hydraulic lime mortars.

<sup>7</sup> 'Eladio Dieste as Structural Artist', pp. 94-105.

<sup>8</sup> 'Technology and Innovation in the work of Eladio Dieste', pp. 138-151.

<sup>9</sup> 'Building Catalan Thin-tile vaults in Spain: a field journal', pp.202-207.

<sup>10</sup> 'Research and Practice in reinforced and prestressed brickwork and the place of Dieste within it', pp. 208-219.

<sup>11</sup> Antonio Dieste, 'A prospect for structural ceramics', pp. 220-222; and Martin Speth, 'Unreinforced shell structures in traditional masonry: a contemporary approach to design and construction', pp. 223-231.

JAMES W.P. CAMPBELL

William Tronzo (ed.)

#### ST PETER'S IN THE VATICAN

310pp. and over 330 illustrations. Cambridge University Press, Cambridge, 2005. £70. ISBN 0-521-64096

It is good to see that monographs of individual buildings are becoming increasingly common. Many of the world's greatest buildings cry out for this kind of treatment. Thus anyone interested in the history of building construction could not help but be excited about the prospect of a book that would lay in out in sumptuous detail the development of one of the most complicated of building histories of all, that of St Peter's in Rome. Sadly if that is the book you are looking for then you will be disappointed. It may have 310 pages and 338 illustrations (all black and white) but there is virtually nothing in this book on the building construction. The titles of the chapters give it away: William Tronzo writes the introductory chapter; chapter two is Glen Bowerstock on "Peter and Constantine"; chapter three Dale Kinney on "Spolia", chapter four is Antonio Iacobini on "The Vatican Basilica from Innocent III to Gregory IX (1198-1241)", chapter five is Christof Theones on "Renaissance St Peter's", chapter six is Henry Millon on "Michaelangelo to Marchionni, 1546-1784"; chapter seven is Irving Lavin on "Bernini at St Peter's"; chapter eight is Alessandra Anselmi on "Theaters for the Canonization of Saints" and chapter nine is Richard Eltin on "St Peter's in the Modern Era". In other words not much space is devoted to the present building but even this list gives a false impression. The contributions vary greatly in length so Millon's chapter covering all the architects who completed the building from Michaelangelo onwards is only 17 pages long while Lavin gets 142 pages to look at Bernini whose work at St Peter's is mainly sculptural rather than architectural. There is a rather brief history of the design in chapters five and six but even in these there virtually no mention of construction methods. It is thus clear that the emphasis is not on the building fabric or even architecture. The whole reads like a set of papers from a conference rather than an attempt at a serious study of one of the world's most important buildings. In conclusion the title is highly misleading: the book is no more than a collection of vaguely related papers which (although no doubt all making a new contribution to their areas) make no attempt to cover the whole subject.

## LETTERS TO THE EDITOR

From Richard Denby:-

Charles Octavius Parnell is a forebear of mine, and I gather he was a London architect. He is mentioned in your Oct 2002 edition No. 64 CHS Newsletter in connection with the headquarters of the London & County Bank, Lombard Street.

Could you suggest where or how might I learn more about his work and his life? I believe his partner was Alfred Smith, and his office was in 49/50 Pall Mall.

(Richard Denby e-mail: [denby@firenet.uk.net](mailto:denby@firenet.uk.net))

## FUTURE EVENTS

Alan Baxter Associates are organising the following lectures and seminars. For general enquiries contact: Alan Baxter & Associates, 75 Cowcross Street, London EC1M 6EL. Tel: 020 7250 1555; Fax: 020 7250 3022

### 16<sup>th</sup> May

Talk by Robert McCarter, American architect, professor and author of the major study 'Louis I Khan' and a number of other studies of Frank Lloyd Wright's work. Here he will look at concrete as Kahn's most effective construction material for realising his architecture. Tel: Philip Boyle 020 7253 6624. Begins 6.30 p.m.

### 18<sup>th</sup> May

What is Modern? Art critic Paul Overy, poet and literary historian Ian Patterson, and architectural critic Alan Powers will address this question in

the context of the V & A exhibition *Modernism: Designing a New World 1914-1939* and the opening in the Gallery of an exhibition of Kandinsky-inspired paintings by Guy Hetherington, and the launch of a book of poems 'Wounds' dating from the 1930s to the present by Denzil Dunnett. Tel: 07759 303166. Begins 6.30 p.m.

**25<sup>th</sup> May**

**Modern.** To celebrate the V & A's exhibition on Modernism, architectural historian Alan Powers will repeat his lecture on his recently published book 'Modern - the Modern Movement in Britain'. This is the most comprehensive study ever published of Modern Movement architecture in Britain and covers the British work of Walter Gropius, Marcel Breuer, Eric Mendelsohn and Serge Chermayeff, as well as architects such as Maxwell Fry, Erno Goldfinger, Oliver Hill and Berthold Lubetkin. Tel: Catherine Lloyd Jones 020 7250 3857

**22<sup>nd</sup> June**

**Save Britain's Heritage Book Fair.** To be held in the Gallery between 12-7p.m. A wide range of organisations involved in the conservation of the built environment will be selling their wares. All welcome. Drinks provided by ABA from 5.30 p.m. onwards.

**14<sup>th</sup>/30<sup>th</sup> June**

**Save Britain's Heritage 1975-2005: Thirty Years of Campaigning.** This exhibition charts the progress of the campaigning charity, SAVE Britain's Heritage, since its inception in 1975. The exhibition illustrates the battles won and lost for the whole gamut of Britain's architectural heritage, always with the emphasis on re-use, from country houses to churches, court houses to pubs, power stations to mental hospitals and wind tunnels to warehouses. Open Tuesday 20<sup>th</sup> June, 2.30-5.30 and Thursday 22<sup>nd</sup> June, 12.00-7.00. Further details Tel: SAVE 020 7253 3500

The following exhibition is currently in progress at the Victoria and Albert Museum, London, United Kingdom. To book telephone +44 (0) 870 906 3883

**18<sup>th</sup> April/  
23<sup>rd</sup> July**

**Modernism: Designing a New World 1914-1939.** This major exhibition at the V&A is the first to explore Modernism in the designed world from a truly international perspective and in terms of all the arts.

At the beginning of the twenty-first century our relationship to Modernism is complex. The built environment that we live in today was largely shaped by Modernism. The buildings we inhabit, the chairs we sit on, the graphic design that surrounds us have all been created by the aesthetics and the ideology of Modernist design. We live in an era that still identifies itself in terms of Modernism, as post-Modernist or even post-post-Modernist.

§

Modernism was not conceived as a style but a loose collection of ideas. It was a term which covered a range of movements and styles that largely rejected history and applied ornament, and which embraced abstraction. Born of great

cosmopolitan centres, it flourished in Germany and Holland, as well as in Moscow, Paris, Prague and New York. Modernists had a utopian desire to create a better world. They believed in technology as the key means to achieve social improvement and in the machine as a symbol of that aspiration. All of these principles were frequently combined with social and political beliefs (largely left-leaning) which held that design and art could, and should, transform society.

**Modernism: Designing A New World** is the first exhibition to explore the concept of Modernism in depth, rather than restricting itself, as previous exhibitions have, to particular geographical centres or to individual decades. Many forms of art and design are represented in the show. But as befits a period when the debates surrounding how people should live took centre stage, the exhibition focuses on architecture and design. The range of objects - including architectural, interior, furniture, product, graphic and fashion design as well as painting, sculpture, film, photography, prints, collage - reflects the period's emphasis on the unity of the arts and the key role of the fine arts in shaping contemporary visual culture.

The exhibition concentrates on the years 1914-39. Europe and, to a lesser extent, America are the focus but the reach of Modernism is demonstrated by selected exhibits or projects from different parts of the world.

**10<sup>th</sup> May**

The next in the highly popular series of Brick Development Association lectures at the Building Centre in London will focus on the extraordinary buildings of Uruguayan engineer Eladio Dieste. Edinburgh University's Prof. Remo Pedreschi will take a detailed look at Dieste's amazing feats in structural brickwork. 6.30 p.m. start. Free entry. To book your seat call 020 7692 6208

**6-7<sup>th</sup> July**

**Brunel Bicentenary Conference - British Empire and Commonwealth Museum, Bristol, United Kingdom.** The name of Isambard Kingdom Brunel is synonymous with great engineering. Born in 1806, he was only 21 when he became resident engineer on his father's Thames Tunnel, responsible for the day-to-day running of one of the most challenging projects of the 19th century. A brilliant designer, innovative, entrepreneurial and unafraid of risk, he thought big and his vision of mass transport played a vital part in the shaping of the modern world.

2006 is the bicentenary of Brunel's birth and to celebrate this many events will be taking place across the country during the year. This conference is part of a year-long celebration in Bristol organised by Brunel 200. It is set in Brunel's historic train shed at Bristol Temple Meads and a host of distinguished engineers and inspirational speakers will debate the huge contribution that engineering has made to our society. The conference is sponsored by Airbus, manufacturers of one of the greatest engineering achievements of today, the A380 double-decker

aircraft. General and programme enquiries to Abby Clue, ICE Conferences, One Great George Street, London SW1P 3AA, United Kingdom. Tel: +44 (0) 20 7665 2318 e-mail: [conferences@ice.org.uk](mailto:conferences@ice.org.uk)

**15-17<sup>th</sup> Sept.**

Historic Farm Buildings Group Conference 2006. The annual Historic Farm Buildings Group Conference will be based at the Holiday Inn on the outskirts of Ipswich. Suffolk is well known for its wealth of timber-framed buildings set in beautiful countryside.

Saturday's outing will include a detailed study of the farm on one village and other sites in the Gipping valley to the north-west of Ipswich and on Sunday we will go to the south-east. We plan to include both typical and estate farms as well as some of the finest manorial sites in the country.

We will introduce the region in presentations by local experts and will hear from a local planning officer he sees the future of these buildings as well as from DEFRA about their policies and the help they can offer. The conference will therefore be of interest to all those who take pleasure in farm buildings in general and are concerned for their future as well as those with a specific interest in East Anglian buildings.

The cost will be £190 to members, to include accommodation, and £210 for non-members. An application form is available from the HFBG website or from the organiser, Susanna Wade Martins, e-mail: [scwmartins@hotmail.com](mailto:scwmartins@hotmail.com)

The Institute of Continuing Education at the University of Cambridge is offering the following courses (Tel: 01954 280280):-

**17-21<sup>st</sup> July**

The Timber-Framed Houses of Medieval England. Tutor Leigh Alston. Focusing on Eastern England, where entire streets of medieval housing still survive, this course will combine documentary and archaeological evidence to examine the evolution of domestic life between the 12<sup>th</sup> and 16<sup>th</sup> centuries. The changing nature of medieval society is reflected in the transformation of smoky, unfurnished open halls into comfortable panelled parlours. Fee £378, non-residents £234

**5-8<sup>th</sup> Sept.**

Exploring Cambridge Architecture. Tutor Adrian Barlow. This course is designed to appeal to anyone who enjoys walking round the college and city of Cambridge, and would like to know more about how to appreciate the architecture. Through a combination of illustrated lectures, discussions, guide tours and informal walks, the course will explore both the familiar and the unfamiliar faces of Cambridge. There will be opportunities to visit some not-often-seen but architecturally fascinating buildings as well as some of the places which are often seen but rarely explored. There will also be a chance to explore the evolution of collegiate architecture from the late middle ages to the present day. This course will inevitably involve a fair amount of walking, and occasionally some stairs. Fee £294, non-residents £185

The IStructE History Study Group will host the following lecture (for details contact Sarah Okoye e-mail: [okoye@istructe.org.uk](mailto:okoye@istructe.org.uk)):-

**5<sup>th</sup> June**

Topic: Cones, Not Domes: John Nash and Regency Structural Innovation. Speaker: Jonathan Clarke. Time - 5.45 pm for 6.15 pm. Place: at the Institution at 11 Upper Belgrave St, London SW1X 8BH

Jonathan Clarke is a construction historian in a unique situation in what used to be RCHME, now amalgamated with English Heritage, in that he sees, records, researches in depth and reports on buildings. His paper to the recent International Construction History Congress, held in Cambridge six weeks ago reported his research into a particularly unusual building and I am delighted he has agreed to come and tell us about it.

The Museum of Artillery in the Rotunda is a little known building within John Nash's (1752 -1835) considerable oeuvre, but it is perhaps his most structurally ambitious. Situated on the edge of Woolwich Common in southeast London, where it has stood since 1820, its distinctive tented roof is immediately recognisable, evoking both battlefield and festival. Inside, the tent-like feel of the building is even more pronounced, with canvas lining seemingly draped from a huge (later) Doric column. It was an extraordinary building born of unusual circumstance.

The roof structure, 116ft in diameter and described in 1830 as having "no equal but the dome of St. Paul's Cathedral", was originally clad in boards and oilcloth, not lead, and encircled by timber-framed walls. The Rotunda roof and colonnade were, for the first few years, an entirely self-supporting spatial enclosure.

The early nineteenth century was a highly experimental period in the history of building technology, not just in terms of iron construction, which was taking bold strides, but also in timber engineering. The Woolwich Rotunda, or Polygon Room, embodies a number of progressive strands in late Georgian structural carpentry. Techniques of timber lamination, of specialised trussing, and of three-dimensional framing were all harnessed to create a new type of roof structure - the freestanding catenoidal enclosure.

**CHS GENERAL CORRESPONDANCE**

Please note that all correspondence not relating to the Newsletter should be addressed to:- The Secretary, Construction History Society, c/o Library and Information Services Manager, The Chartered Institute of Building, Englemere, Kings Ride, Ascot, Berkshire SL5 7TB. Email: [michael.tutton@virgin.net](mailto:michael.tutton@virgin.net)

