

# Industrial Archaeology and Archaeometry Newsletter

Vols. VII–VIII.

English Supplement

1990.

## Editorial

Two years have passed since our Readers could receive news on Hungarian archaeometry, in form of our Newsletter and its English Supplement. The reason for this long silence was, partly, rooted in the fact that members of the Working Group for Industrial Archaeology were active in preparing the Catalogue of Industrial Archaeological Relics (*Iparrégészeti Leletkataszter*), members of the Archaeometry Working Group worked on compiling the volume 'Archeometrical Studies in Hungary', in English and Hungarian versions.

The volume was issued in English by the end of 1988, while the Hungarian version is expected for 1991.

Two years in this rapidly developing field is a long time. During this, favourable and less favourable changes took place in the work of both Committees; changes in staff affecting the Industrial Archaeological and Archaeometry Newsletter as well. Former editor of the Newsletter, Márta JARÓ has resigned from the post due to her other tasks; anyway, she is supporting the publication of our Newsletter as Member of the Editorial Board, together with Elisabeth JEREM on behalf of the Industrial Archaeological Working Group. The changes are reported in details within the "Current activity of the Working Groups". Two years also brought with a variety of scientific meetings and conferences, reported on in details mainly for the Hungarian version of our Newsletter. Unfortunately, the international conference planned for 1990 in our previous issue had to be postponed for 1991, the back page of the Newsletter serves as second announcement, containing basic information of the 2nd Circular.

*K. T. Biró editor*

## Current activity of the Working Groups

### *Joint meetings of the Committees*

The activity of the Industrial Archaeological and Archaeometrical Working Groups have always been closely related. In the past two years, the two Committees had several joint projects and, seemingly, the future program of the Working Groups is intended to have even more solid ties.

The Working Groups for Industrial Archaeology and Archaeometry had a joint session on the 18-19th of May, 1988. The main topic of the session was metallurgy, copper and bronze investigations as well as lectures on kilns and furnaces.

On the 4th of May, 1990, another joint session was devoted to lectures of Austrian colleagues from Vienna.

Apart from the lectures, reports were made on the International Symposium in Archaeometry, Heidelberg 1990, where 9 Hungarian colleagues could take part in the work of the meeting.

In September, both of the Working Groups elected their new leaders for the coming 2-year term. Renewal of membership became actual, which took place on the most recent session of the Working Groups, 14th of December 1990. Most important events of the meeting comprised current tasks for the forthcoming International Archaeometrical Conference, October 1991 and consent to possibly

undertaking the honouring task of organising the next International Symposium in Archaeometry.

### **Current Presidium of the Working Groups:**

Working Group of Industrial Archaeology

*Chairman:* Gömöri, János

*Secretary:* Költő László

### **Working Group of Archaeometry:**

*Chairman:* Borszéki, János

*Secretary:* Járó Márta

## Archaeometrical Committee

### Dating

#### TL dating

BENKŐ, Lázár and GÖMÖRI, János were lecturing on TL dating of early medieval iron-smelting furnaces on a meeting of industrial archaeology, held in 1988, Brno, Czechoslovakia.

BENKŐ, L. took part on the 9th Conference on International Solid State Dosimetry (Vienna, 1988), presenting a lecture on the method developed for the measurement of small beta radiation necessary for TL dating. In the collaboration of the Isotope Institute of the HAS, Budapest, the Boskovic Institute, Zagreb and the Nuclear Research Institute, Sofia, test dating of identical archaeological samples is being performed to investigate comparability of the method.

TL dating of Austrian 'red mould' samples is in progress. (B.L.)

TL dating of an Early Neolithic site was reported on by ERDÉLYI, Balázs on the International Symposium of Archaeometry, Heidelberg 1990.

#### Archeomagnetic dating

MÁRTON, Péter and GÖMÖRI, János had a joint lecture in France, 1988, on the conference entitled "Experimentation en Archeologie - bilan et perspectives" about TL dating of iron smelting kilns.

MÁRTON P. had further lectures in the topic of archaeomagnetic dating with the following titles; in 1989, Exeter, "On the secular changes of archaeomagnetism in the past 2000 years in Hungary", as well as "Values of archaeomagnetic direction and their role in archaeometry" in Heidelberg, 1990.

Results of the current state of affairs in archaeometrical dating in Hungary has been reviewed by MÁRTON, Péter and GÖMÖRI, János for the Industrial Archaeology and Archaeometry Newsletter. The detailed explanation of the results is given in our Hungarian version; with a figure summarizing the main results. Special attention is paid to certain periods which are so far scarcely documented in archaeological records, namely between A.D. 450–600, as well as between 1150 and 1300 and after 1500 A.D. The celtic period (La Tene) is also interesting from this respect.

It would be important to know the exact date when the value of the declination is changing from negative to positive, somewhen around 800 B.C.

The authors inform the archaeologists on the types of evidence which are hopeful for an archaeometric dating and give contact addresses:

Márton Péter – ELTE, Dept. of Geophysics  
1083 Budapest, Kun Béla tér 2.  
Tel. (1) 1-334-160 / ext. 104

Gömöri János – Working Group for Industrial Archaeology  
9401 Sopron, Pf. 68  
Sopron Museum, Dept. of Archaeology  
Tel: (99) 11-327 / ext. 21

#### Amino-acid racemisation dating

Csapó, János and Cs. Kiss, Zsuzsa presented a lecture in Heidelberg on "Amino-acid racemisation dating of fossil bone samples" (1990). On the same conference they announced their preliminary results in relative dating on the basis of fatty acid composition. Their description of the method and conditions of measurements are published in details in the Hungarian version as well as *Anthropologia Hungarica* 20. 67–68 (1988).

between 5.000–50.000 B.P.,  $\pm 10\%$   
between 50.000–100.000 B.P.,  $\pm 15\%$   
over 100.000 years,  $\pm 20\%$

The fatty acid composition of the bones, at the same time, can be used for relative dating and refitting troubled skeletal elements, provided the age difference between the burial of the individuals exceeded 100 years.

The analyses can be performed on bone samples of 2–5 g.

#### Contact address:

Dr. Csapó János Pannon Agrártudományi Egyetem (University of Agrarian Sciences) Állattenyésztési Kar – Central Laboratory  
H-7400 Kaposvár, Dénesmajor 2. Pf. 16

#### Analysis of archaeological materials

##### Metallography

SZÉKELY, Levente reported on the study of metallurgical finds and swords from the Avar period from the localities Dabas-Paphegy and Tápé, respectively.

BAKOS, Miklós and GEGUS, Ernő were investigating antique and medieval bronze objects by laser emission spectroscopy at the Veszprém University.

JÁRÓ, Márta–GONDÁR, Elisabeth–TÓTH, Attila continued their project in analysing metal fibres of museum textiles from morphological and chemical point of view. Members of the team presented a lecture on gilding technique of metal fibres on the Heidelberg meeting.

KÖLTŐ, László continued his X-Ray fluorescence analyses in collaboration with KIS VARGA, Miklós from the Debrecen Nuclear Research Institute. Költő, who had the possibility to collect material in Baszkiria, USSR, collected comparative reference material from silver and bronze objects of the Ugor period for chemical analysis.

#### Industrial Archaeological Committee

##### Gyoma 133: new site with industrial archaeological remains

A Roman Age site from the terrain of the 'barbarian' Sarmatians has been excavated by VADAY, Andrea and VICZE., Magdolna in frames of the Micro-Regional Research Project of the Archaeological Institute. The site is dated to the period II–III. A.D. The large surface excavation opened 383 archaeological units including houses, kilns and workshops. Some of these could be connected to iron processing. The units of industrial archaeological importance were accompanied with raw material blocks and half-products of iron smelting as well as utensiles indicating intensive artisan activity.

Another site with industrial archaeological importance was currently excavated by GÖMÖRI, János from the site Hidegség.

##### Keftubarren / Ingot melting form by Ilon, Gábor

On the fortified settlement of Gőr-Káplonadomb, joint excavations of the Szombathely and Pápa Museums unearthed material from the Iron Age and the Conquest Period. Significant finds of the Iron Age material comprise a wide choice of metal industry including several melting forms of sandstone. The most interesting melting form found is a unique object from the section K-6, found in a pit marked "a".

Here melting form of an ingot (ancient weight) was found. Reconstruction of the product from a cast indicated that the weight could probably equal to 34, 512. According to Buchholz's typology, the ingot casted in the melting form belonged to type 3. A more detailed publication of the unique find is in press for *Acta Archaeologica Hungarica*.

### **From the activity of the Interdisciplinary Department of the Archaeological Institute of the HAS**

#### **Interdisciplinary connections in the study of Roman Age by GABLER, Dénes**

Provenancing terra sigillatae has been performed, in collaboration with the Nuclear Research Laboratory of the University of Polytechnics since 1980. About 150 samples were analysed by M. BALLA and her colleagues from the localities Zalalövő, Szakály, Tác and San Potito. Most of the pieces analysed could be attached to reference samples with the exception of some Italian ware which suggest the existence of a so far unidentified workshop in Central parts of the Italian Peninsula.

#### **Anthracotomical study of charred wood samples**

In collaboration with SZALAY, Zoltán, about 25 wooden remains were successfully identified from the Roman site Ács-Vaspuszta. The samples represented 14 arboreal species, mainly used as building logs and pieces of furniture. The analysis was complemented by SEM studies of the samples. The project was supported by the Soros Fund.

Archaeozoological material of the above mentioned excavations were undertaken by BÖKÖNYI, Sándor, BARTOSIEVICZ, László and CHOYKE, Alice, respectively. Results are published in the B.A.R. Series (The Roman Fort at Ács-Vaspuszta) and in *Acta-Arch.Hung.* 38 (1986), respectively.

#### **Application of PC-s in the project 'Archaeological Topography of Hungary' by KVASSAY, Judit**

The Archaeological Institute of the HAS has been systematically collecting field information, publication and archive data on Hungarian archaeological sites, published according to administrative units in the series "*Magyarország Régészeti Topográfiaja*" (Archaeological Topography of Hungary). The scope involves, from a temporal point of view, information from Stone Age till Turkish Period (Late Middle Ages). The project is lead by Dr. István TORMA.

When the first personal computers were obtained, it seemed evident that this basic source of information should be computerised. A quick glance at the capacity of the PC and the amount of data, however, convinced us that it could not be solved. Encouraged by the efficiency of smaller projects, however, it seemed useful at least to make a pilot program on the topographical data. The most suitable test material for this was found in our bibliographical data, originally re-

corded on a card catalogue with perforated edges. Data were recorded in dBASE III+format on an IBM compatible AT. The first set of samples comprised 650 items elaborated in 1987-88. The success of the first trials lead to extending the project gradually towards the whole collection of bibliographical information and integration to other fields of topographical studies, e.g. field survey reports.

#### **Complex methods in the investigation of settlement networks**

Csáki, György-Jerem, Erzsébet

In the past few years, the investigation of settlement network, and inter- and intra-site topography has become prevalingly important. Such scientific projects are carried on in the Archaeological Institute under the name of '*Microregional Projects*'. At the same time, this approach made necessary to introduce new methods of investigation. Aerial photography, photogrammetry, geophysical prospecting and their computer-aided processing help in settlement historical research.

The investigations are extended over the reconstruction of the contemporary environment and subsistence system as well (palaeoecological, biological studies). Complex methods also incorporate radiometric dating and analysis of techniques and materials.

#### **New methods in investigation**

The Industrial Archaeology and Archaeometry Newsletter has always concentrated, mainly, on the research activity of the Members of the Working Group and colleagues cooperating in our studies. In the future, however, we would like to devote more attention to new scientific results achieved in Hungary by colleagues working (so far...) not associated with our Working Groups.

#### **Malaco-thermometer**

Sümegei, Pál

It is a well-known commonplace in Quaternary studies that opposed to many species and higher taxa, the malacofauna is ill suited for climatological studies and, consequently, biochronology due to micro-environmental influences. With extensive studies on lowland snails, however, experts from the Debrecen University worked out a method of statistical investigation which can help not only in dividing the Late Pleistocene according to molluscan biostratigraphy, but also to determine on the basis of actual ranges and optimal living conditions of the most important indicator species the contemporary July mean temperature value as well. The fossil snails were collected from soil samples in large quantity, offering the basis for a statistical analysis as well as C-14 dating of the carbonate shell.

On the basis of the method, the climatical history of the past 30.000 years was reconstructed. The '*malaco-thermometer*' was compared to other methods of palaeoclimatic reconstruction, found effective and complementary.

# INTERNATIONAL CONFERENCE ON ARCHAEOOMETRY

Veszprém, Hungary October 7-11, 1991.

## Second Circular - Last Call for Papers

### PLACE

This meeting, organized by the Hungarian Academy of Sciences (the Archaeometrical Working Group of its Veszprém Committee and the Archaeological Institute), will take place in the west Hungarian town of Veszprém, a famous Medieval Episcopal center. The seminar itself is in an architectural monument, a former prebendal house. Accommodation will be in the dormitories of the theological college. Details on transportation will be included in subsequent circulars.

### TIME

The preliminary schedule is as follows:

**October 6, Sunday:** arrival in Budapest, transfer to

**October 7, Monday:** registration, sessions Veszprém

**October 8, Tuesday:** sessions

**October 9, Wednesday:** sessions, posters,  
farewell excursion

**October 10, Thursday:** optional one day excursion to  
archaeological sites in the area

**October 11, Friday:** departure

### PROGRAM

Up to the end of 1990, some 70 potential participants have expressed interest in attending. At present, 45 papers have been accepted. The topics include archaeological survey techniques, dating and material analyses (lithics, ceramics, metals, biological materials), as well as multidisciplinary projects etc.

We plan to hold 20 minute presentations with 10 minute discussions as well as a poster session. The preferred language would be English, but German or French will also be acceptable.

### COSTS

Depending on the number of participants, the projected costs of the meeting should be the equivalent of 350 to ~~400~~ US \$ per person. This would include the registration fee, full board (accommodation and meals) for the four days from the 7th thru the 10th (excluding the excursion on October 11) and the costs of publication.

For the optional October 11 excursion additional 40 \$ is estimated.

## PUBLICATION

We would like to publish the proceedings of this conference. To carry out this work, however, we will need the full cooperation of all contributors. The following formal outline should be adhered to as closely as possible:

Introduction, problem, hypothesis  
Material and methods  
Results  
Conclusions  
References

Final manuscripts should be submitted **at the meeting**. They should not exceed a strict ten page limit (50x25 n, double spaced) not including figures and tables.

Given the limited space figures and tables should not contain redundant information. Camera ready figures and glossy prints should be prepared in maximum A/5 size (21x15 cm).

Scientific citations (author, date: page) should be used. Any alphabetical reference list is acceptable as long as it is consistent with the text and within itself. Current Anthropology is referred to here as a preferred guideline.

We would like to encourage the submission of manuscripts on computer diskettes compatible with the "Euroscript" system (accompanied by a printed copy). This will facilitate and accelerate editing.

## CONTACT

Those who are interested, please send a ten line abstract to

László Bartosiewicz  
Archaeological Institute of the  
Hungarian Academy of Sciences  
1250 Budapest, Úri utca 49.  
Hungary

Postmarked before **February 28, 1991**. Please type the following double spaced:

TITLE  
Author/s  
(Institution)  
Ten lines of text