

# INDUSTRIAL ARCHAEOLOGY AND ARCHAEOMETRY NEWS

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APRIL 1986

## EDITORIAL

Encouraged by the positive receipt of the English summary of our "Industrial Archaeology and Archaeometry News" we have decided on the presentation of the supplement in English of the April issue of the Newsletter as well. In the supplement we give the shortened version of the news, articles, book reviews published in the original Hungarian version, following its structure. We try to inform our readers first of all about those events that would let insight into the archaeological studies performed in Hungary recently. Thus we give information on the proceedings of two meetings held in October 1985 and in April 1986, respectively. The 1985 conference was devoted to the geophysical prospection, organized at the Hungarian Academy of Sciences. The other one was organized by the Archaeometry and Industrial Archaeology Working Groups together, and it was concerned with the material testing, prospection and age determination of pottery, metal

and sites of industrial archaeological significance.

In our book review a special attention is paid to Austrian archaeometrical research on account of two recent publications on the related activity of our neighbours. A detailed review of the periodical "Geophysics", March 1986 is given, as it was devoted to archaeological prospection.

For those who didn't get our first summary we give some information on the Industrial Archaeology and Archaeometry Working Groups. The two groups work within the frame of the History Committee of the Veszprém Academic Committee /one of the committees of the Hungarian Academy of Sciences/.

We would like to thank our foreign colleagues who were so kind, getting our first English summary, as to encourage us to go on with it, to send us their own publications, to inform us on the research performed in their country, their results and conferences. We hope that this exchange of information would become an orderly practice.

The Editor



THE MEMBERS OF THE HUNGARIAN ARCHAEOMETRY WORKING GROUP  
WISH SUCCESS IN WORK TO THE PARTICIPANTS OF THE  
25th INTERNATIONAL SYMPOSIUM ON ARCHAEOMETRY !

## ARCHAEOLOGY WORKING GROUP NEWS

The Archaeometry Working Group and the Industrial Archaeology Working Group organized their latest common meeting in April, dealing with material investigations. All the presentations were built up of two parts: the archaeological presentation was followed by the lecture on the archaeometrical investigations.

You can find here the summaries of the lectures delivered.

### Neutron activation studies on pottery finds from the Avar period

ROSNER Gy./Béri Balogh Adám Museum/: The origin of the pottery finds from the Szekszárd Avar age settlement, based on the results of neutron activation analysis

There were two pottery workshops unearthed in the Szekszárd Avar age settlement, the products of which can be seemingly well separated from each other on the basis of the NAA results. The gravegoods of the nearby Avar cemetery contain, with few exceptions, the products of the two workshops characterized. Pieces of different elementary composition denoted the existence of a third workshop, later corroborated by recent excavations, by the opening of the third workshop at the Szekszárd settlement.

The second phase of the work has been devoted to distribution studies on the products of the three Szekszárd pottery workshops, as well as the characterization of other potential workshops.

NAGY J./Technical University of Budapest/: The NAA investigations of the Avar pottery

For a study of the trade contacts in the Avar period and the pottery distribution studies, samples from the pottery finds of the Székesfehérvár, Dunaujváros, Baja and Szeged Avar age sites were collected. 48 specimens were investigated by instrumental neutron activation. The irradiation of the samples was performed at the Central Research Institute for Physics.  $\gamma$  intensities were measured after a week /Lu, Yb, La/ and a month /Cr, Th, Cs, Hf, Sc, Fe, Co and Eu/ for short and longer half-time isotopes, respectively. Counting was performed using an ORTEC Ge/Li semiconductor detector, measurements were performed by 4K ICA 4096 channel analyser. The  $\gamma$  spectra obtained were evaluated and the concentration values compared by computer assisted statistical methods, i.e. cluster analysis.

The results revealed that all the specimens analysed, with the exception of one piece only, could be classified into one of the three workshops located at Szekszárd. It seems probable that these workshops supplied the archaeological sites of the period in a 50-60 kms wide distribution radius with the characteristic grey pottery.

### Investigation of Iron age graphitic vessels; Their technology and provenance

JEREM E./Institute of Archaeology/: About the Iron age graphitic vessels; The aims of the investigations

In the more recent phase of the Iron age a new kind of pottery appears in the settlements and among the gravegoods of burials, the so called graphitic ware /Graphittonware/. The appearance of this specific type of pottery is all the more remarkable in the Central Danube Basin and the Eastern slopes of the Alpes as graphite is not known to occur in the Carpathian region. The graphite lumps found in course of excavations got into the Carpathian Basin as imported goods. At some localities, the ratio of the graphitic ware among the pottery finds can reach as much as 20-25 %.

The results of the investigations can offer a means to get nearer to problems of technology and the origin of the raw material. At the same time the main direction of trade contacts can be detected.

KARDOS J./Eötvös Loránd University, Faculty of Sciences/: The investigation of the graphitic vessels

The graphitiferous rock contained in the pottery finds were investigated by chemical and mineralogical methods.

The technology of the production can be characterized by the firing temperature and the graphite content. The mineralogical composition of the graphitiferous rock and its trace element content were utilised for provenance studies.

For the separation of the pure graphite and the graphitiferous rock from the pottery raw material, flotation and HF acidic treatment were applied.

The trace elements, suitable for source characterization, were selected after optical emission analysis of graphitic schists of Lower Austria and Passau as well as archaeological specimens.

### Investigations on the jewels found in a Sarmatian female grave

VADAY A./Institute of Archaeology/: The grave and its gravegoods

On the territory of the Tiszaföldvár

Brick Factory rescue excavations of a Sarmatian settlement and cemetery have been performed since 1976. The pit, deepened for the grave in question, Nr. 84, was 100 cms wide, 240 cms long and 140-165 cms deep. The female corpse had been placed into the grave rolled into ox- or horsehide, directed in S-N position, with the head towards S. The length of the skeleton measured was 162 cms.

The scientific investigation of the very badly preserved metal objects was necessary not only for the definition of the raw material they were made of, but also for the significance of the material, seemingly rich in the given period. Besides the common grave-goods there were objects found in this grave of which we could suppose on typological grounds that they had originated from abroad, that is neither in Pannonia, nor in the Sarmatian Barbaricum, but possibly from Southern Russia. As the situation is similar in several male and female graves of the cemetery, a detailed investigation of the raw materials and technology might help the identification of the first and second generation of immigrants to the Carpathian Basin. By examining the objects that seemed to be made of silver at the first glance it was found that they are only covered with silver coating. Besides the determination of the raw material, we were eager to know more about the techniques of silver-coating.

The objects investigated were the followings: a torques, two earrings, bracelets, nails of spherical heads covering the headware, rings for the necklace and its metal wire and tubular beads, as well as the filigree ornamented silver fibula with blue glass inlays. The latter one can be supposed to originate from the Southern parts of Russia, coming from a Pontian goldsmith's workshop.

GEGUS E./Chemical University of Veszprém/:  
The laser microspectroscopical investigation of the find assemblage

An optimally directed laser impulse series was applied to a specific area of the sample, selected under microscope. An amount of less than a  $\mu\text{g}$  of the sample was evaporated and a lattice-spectrogram was taken from the microplasm, the energy of which had been enlarged by an auxiliary spark discharge. Controlling the penetration depth of the laser sampling we can get information on the chemical composition of the sample, the differences of the main components, trace and accessory elements of the metal the object was made of and the possible coating. In the material of the objects, silver and its different alloys /Cu, Sn, Pb, Zn/ were identified with the characteristic trace and accessory elements. On the surface of the finds the presence of a silver layer different from the lower alloy could be spotted. The sampling technique applied is practically non-destructive

for the objects.

BAKOS M./Chemical University of Veszprém/:  
The evaluation of the results

Based on our microchemical investigations it can be stated that the jewels were made of silver alloy, except for the torques. The screw metal wire beads of the necklace as well as the material of the fibula ornamented with filigree technique are of good quality silver alloy, while the rest are bad quality silver alloys. The high silver content surface of the latter objects were probably reached applying some "whitening" technique. The torques is made of bronze, and covered on the surface with a thin silver coating, and possibly heated to assure the durability of the covering. The material of the bracelets and the earrings are identical, possibly they are the products of the same master.

The archaeometrical study of the Kópháza iron mines and smelting furnaces from the Árpád period

GÜMÖRI J./Liszt Ferenc Museum/: The finds of industrial archaeological significance found during the Kópháza excavations

The Kópháza iron ore mines were excavated in an environment of bushes and trees that made the digging rather difficult. The ore smelting furnaces, planted on the mine were indicated by the presence of slag fragments found on the cultivated grounds. More precise location of the archaeological units were hoped to be found by geophysical prospection.

VERŐ J./Geodetic and Geophysical Research Institute/: Geophysical prospection around the iron ore deposit and the smelting furnaces

Magnetic measurements were performed along some sections. The systematical survey of the site was prevented by the endowments of the locality /forest, pits, many iron-content debris/. At some places a definite anomaly reaching the 100 nT order was received from relatively great depths /i.e. 2-4 meters/, that could not be connected with the formation of the ore, because the limonitic iron ore is not magnetically sensitive. In the neighbouring slag accumulation the traces of a heavily eroded smelting furnace were spotted in the form of a weak and diffuse anomaly /10-12 nT/.

CSONGOR, F./Nuclear Research Institute/:  
The  $^{14}\text{C}$  age determination of the charcoal finds from the Kópháza mines and smelting furnaces

The charcoal finds found during the excavations of the working pits of the

iron ore mine and smelting furnaces were taken to the Nuclear Research Institute of the Hungarian Academy of Sciences in Debrecen and determined on the equipment developed there. After a chemical preparation the samples were burned to form a gas phase, and their  $^{14}\text{C}$  activity measured by a proportional counter. The conventional  $^{14}\text{C}$  ages were defined in BP years, using the Libby half-life time /5568 years/, and these data were transformed using the calibration tables into calendar years.

According to the measurements performed, the age of the charcoal samples from the Kópháza iron ore mine were  $1190 \pm 120$  yrs /Deb-490/, while the charcoal of the workshop pit was  $990 \pm 110$ , A.D. The data measured conform well with the archaeological results.

IVANCSICS J./Central Institute of Mining Research /: The geological setting of the iron deposits and the smelting furnaces, and the mineralogical-petrological investigation of the finds

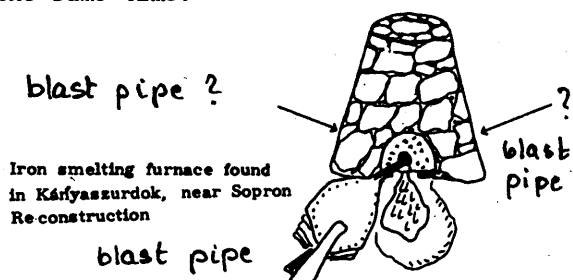
The scalar fault system of the crystalline rocks of the Sopron Mountains are covered, being a rim to the Kisalföld basin, by Badenian clay and Pannonian sediments sedimented on them in discordant layers.

In the poorly ventilated Pannonian lake system sediments of sulphidic precipitation were formed. The paleontological relics washed in are filled with chemogene pyrite, siderite and oligonite /Congeriae, Limnocardia/. They can be transformed to goethite and limonite in near-surface oxidative environment. Another group of the limonite concretions were formed from precipitation of solutions.

The iron ore was collected from the surface and near-surface of Pannonian outcrops and their Pleistocene reworked material by funnel-shaped pits and shafts.

Besides the furnaces utilising small heaps of smelt iron /buca/, the ore analysed has proved to be similar to those of the mines. Their mineralogical investigation could demonstrate the dehydrated, burnt product transformed into hematite.

The viscous iron slag is also of characteristic composition. As a result of the smelting technology, the bulk of the iron entered a silicate /fayalite/ phase with reducing the metallic iron at the same time.



## MEETINGS CONFERENCES

### "Geophysical methods in archaeology"

The first initiative for the academic discussion of the joint work of geophysicists and archaeologists in Hungary was held at the Hungarian Academy of Sciences in October, 1985. The aim of the meeting and the poster exhibition organised at the same place was to make known the methods and possibilities of the geophysical exploration for archaeological purposes all over the country and to have these methods introduced into practical excavation-work in a wide range and in an organized form. Geophysical methods in archaeology have been used for about ten years in Hungary, but only a small number of archaeologists took advantage of the possibilities.

The lectures were grouped according to topics and archaeological ages. After the geophysical presentations a brief summary of the archaeological relations, of the interpretation and usefulness of the performed geophysical measurements were given by the archaeologists.

KAKAS K., PATTANTYUS A.M., SZABADVÁRY L. /Eötvös Loránd Geophysical Institute/: The potentials of geophysical methods used in archaeology

The authors introduced the geophysical methods and instruments suitable for archaeological purposes, and the types of features which can be prospected by them. They outlined the tendencies of development concerning both methodology and the instrumentation.

PATTANTYUS A.M., SIMON A./Eötvös Loránd Geophysical Institute/: Geoelectric measurements performed on prehistoric mines

The authors detected the location of the flint mine galleries at Sümeg and the extraction pits of the Middle Paleolithic /50 000 years old/ flint mine found at Farkasrét in 1984, as well as its extension and expectable depth by geoelectric measurements.

BACSKAY E. /Hungarian Geological Institute/ and CSÁNK V./Historical Museum of Budapest/ commented the results from the archaeological point of view.

CSÁTHÓ B., KAKAS K., PATTANTYUS A.M., SIMON A., SÖRÉS L. /Eötvös Loránd Geophysical Institute/: Prospection of Roman fortress walls by geophysical methods in Fenékpuszta, Alsóhetény, Ságvár, Balácapuszta and Tács-Gorsium

Due to the high specific resistivity of the walls the geoelectric method was

mostly successful /Alsóhetény, Ságvár, Balácapuszta/, but ruins were also found by magnetics /Fenekpuszta/. Experimental measurements were carried out by radar equipment. The place of walls could be detected by radar much more quickly and productively than by resistivity measurements /Sárvár/.

PALÁGYI S. /Bakonyi Museum/ and TÓTH E, /Hungarian National Museum/ commented the results from the archaeological point of view.

PATTANTYUS A.M., SÜRES L. /Eötvös Loránd Geophysical Institute/: Geophysical prospecting of medieval buildings and objects

In the territory of Visegrád-Várkert places of kilns were detected by magnetic measurements, and on the neighbouring Sibrik-hill the place of a building of the bailiff's castle was detected by electric measurements. At Esztergom-Alsó-sziget, however, the result of the measurements did not correlate with the archaeological finds /Medieval cloister/. Resistivity measurements were performed at Jászdózsza, in the territory of a Jazygian settlement.

KOVALOVSZKY J., SOPRONI S., LOVAG ZS. /Hungarian National Museum/ and SELMECZI L. /Cultural Ministry/ commented the results from the archaeological point of view.

MARTON P. /Eötvös Loránd University, Geophysical Department/: Theoretical principles and practical results of archaeomagnetic dating

The theory and the practical realization of the method were presented in detail. For the efficient application of the archaeomagnetic dating a lot of data would be necessary, which is not yet available, therefore, the most important task now is the collection of data from different ages, in addition to some approximating datings.

GÖMÖRI J./Liszt Ferenc Museum/ and HORVÁTH F./Móra Ferenc Museum/ commented on the problem.

VERŐ J./Geodetic and Geophysical Research Institute/: Geophysical prospecting of iron industry relics near Sopron and in Somogy

The lecture was a detailed account of the results of geomagnetic measurements performed near Sopron and concerning the rescue excavation at the Kisbalaton /Somogy/, aimed at the prospecting of the relics of iron industry. The perspective areas for excavation could be detected excluding those devoid of anomalies on the basis of presented manual and simplified processing.

GÖMÖRI J./Liszt Ferenc Museum/ and KÜLTŐ L./Rippl-Rónai Museum/ reported on

the comparison of the geophysical data with the results of the excavations.

CSÓKÁS J., GYULAI A./University of Heavy Industries, Geophysical Department/: Results of electric and magnetic geophysical measurements in archaeological excavations in Northern Hungary

The authors managed to detect the places of holes and pits by geoelectric and magnetic measurements to determine the limits and the internal features of a mound.

PATAY P. and GÁDOR J./Hungarian National Museum/ commented the results from the archaeological point of view.

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"Making adolescents /10-16 years old/ aware of the existence, the study and preservation of the archaeological heritage"

Call for participants and papers

After the success of the 1985 meeting about the sensibilization of children /6-10 years old/ to the cultural heritage, the European University Center for Cultural Heritage established at Ravello has decided to organize a follow-up in 1986, taking into account the wishes of the participants of the 1985 meeting.

This European workshop will take place towards the end of May, there will be fewer communications screened and chosen between the themes announced hereafter. Authors are kindly invited to send their proposals and texts beforehand, so that a greater number can be preprinted in the PACT NEWS to facilitate the debate.

Themes that were suggested are the following:

a. Educational services which are in charge of the archaeological heritage; their official status; the relation between them in different European Countries; possible cooperation.

b. The use of museums, sites, monuments for illustration of courses in the secondary technical and professional schools: the courses in history, ancient languages, excursions; use of these types of teaching in special categories of schools /handicapped children, e.g./.

c. Cultural heritage and the teaching of aesthetics.

d. The teaching about ancient technology: pottery, weaving, laces, bookbinding...

e. Educational publications, vulgarization, archaeological reconstructions /e.g. Archeodrome.../. Films, didactic exhibits, etc.

At the end of the European workshop it

would be necessary to draw the following possibilities:

1. to find a way of educational cooperation in this field on an European level;
2. to show the need of education for future teachers;
3. to improve the publication policies;
4. to achieve the diffusion of the lists of such publications;
5. to publish a professional directory of all persons engaged and interested in the field.

This Center is looking forward to your announcement of participation and your texts as soon as possible, so that we could be able to design an almost definitive program.

There will be the possibility of an exhibit of books and educational supports related to the workshop.

## BOOK REVIEWS

Similar to Hungary in Austria we find no central institution that would be supplemented with the suitable equipment for performing all the archaeometrical investigations. Thus a wide network of experts and institutions was organized in which the experts of the different institutions perform the archaeometrical measurements on the means at their disposal.

In the first volume of the "Wiener Berichte über Naturwissenschaft in der Kunst"/Vienna News about Sciences in Art/ as well as the proceedings of the 1984 conference on archaeometry in Austria presented in the volume of the "Naturwissenschaft und Technik in der Kunst"/Sciences and Technic in the Art/ we can get a glimpse into the archaeometrical activity of the Austrian experts.

WIENER BERICHTE ÜBER NATURWISSENSCHAFT IN DER KUNST, 1/1984, Hochschule für angewandte Kunst in Wien, /Wien, 1985/, edited by Weber, J. 276 p.

The articles of the volume reflect the interdisciplinary approach stressed in the Foreword as well. In connection with the museum objects investigated, the opinion of the scientific expert, that of the arts /art historian, archaeologist or ethnographer/ is also found.

In the chapter devoted to age determination, TL dating of Etruscan terracotta head as well as pottery from South-America is presented. The investigation of the

terracotta statue belonging to a private collection resulted in the following statement: the statuette is not older than 150 years, thus it must be a falsification./Its stylistical analogies were made in the 5th-1st centuries B.C./ The age determination of the anthropomorphic Zapotec pottery from Oaxaca state, South-Mexico was made necessary by the fact that over 30% of the Zapotec pottery in the collection of the British Museum has been proved to be forgeries. The pieces investigated so far from the Vienna collection are dated by TL as 910-1490 years old, thus they can be expected as original ones. The TL investigation of a vessel from the Moche culture of Peru /100-700 A.D./, representing an erotic scene, supported the opinion of the ethnographer, namely that the upper part of the vessel is only a modern supplementation.

Beside the articles on age determination those of material testing are grouped according to types of raw material, that is enamel, painting, glass, pottery, metal, paper, stone and mural painting. Some of them are briefly summarized here in the followings.

The analysis of the painting of Raffaello "Madonna in the Meadow" is a good example of the integration of Infra-red research results into the art historical interpretation. Paint and binding medium were also identified.

Stained glass window of Medieval age were investigated using electron microscopy, microprobe analysis, X-ray diffraction etc. with special regards to the corrosion of the glass.

Metallographical studies on a helmet supposed to belong to the 15th century revealed that it could not be produced earlier than the 18th century.

The paper on montanarchaeometry /industrial archaeology/, its potentials, connections with the archaeometrical research in general, gives an insight into the copper- and ironmetallurgical studies performed in Austria.

In connection with the studies on papers and ink, the destructive effects of copper-based pigments and iron galls inks were considered in respect of paper and parchment.

A Fayum portrait of the 3rd century A.D. was investigated before restoration by microchemical and instrumental analytical methods in respect of pigments and binding mediums. The following pigments were identified: white bolus, lead white, charcoal black, red ochre, green earth and gypsum, while the binding medium is a protein containing phosphorus /egg yolk or kazain/ mixed with wax.

In the chapter devoted to the examination of building stone, the biodeterioration of building stones and the effects of air

pollution are discussed.

In connection with mural painting, the pigment layer analysis of a 16th century painting is presented which was repainted several times. The investigations successfully separated the original painting layer from the rest. The deterioration of the mural painting and its reasons were also studied.

NATURWISSENSCHAFT UND TECHNIK IN DER KUNST, November 1984, Bundesministerium für Wissenschaft und Forschung, /Wien, 1985/ 389 p. ill. /Proceedings of the Austrian conference on archaeometry/

The primary goal of the archaeometrical conference organized in November 1984 was to inform the archaeologists and the restorers on the potentials of the investigations of museum objects. The lectures were organized in 3 sections: Material testing methods - in the work of this section X-ray fluorescence and other spectrochemical methods, neutron activation analysis, metallography etc. were presented. Science in archaeology and ethnology - in this section case studies of certain applications were discussed, while in the section Science in restoration and conservation the corrosion processes of the different raw materials, its causes, the material testing preceding the restoration and the auxiliary products utilized in conservation as well as their control was dealt with.

GEOPHYSICS, March 1986  
Manasha, Vis., USA

The March 1986 issue of the periodical Geophysics contains 11 articles from the topic of the archaeological applications of this science. About half of these were presented on the 54th Congress of the Society of Exploration Geophysicists, in the section of "Geophysical Archaeology".

The special issue is introduced by the editor Jeffrey C. Wynn from the U.S. Geological Survey, the section leader of the 1984 Congress. In the Foreword he summarized the geophysical methods which are regularly applied in archaeological research. Geophysical archaeology has a tradition of some 40 years, or, including the air photographic prospection, that of 70 years, mainly in Europe. Except for hole geophysical methods, practically all geophysical techniques were tried on archaeological problems including temperature measurements, seismic methods, magnetic measurements, resistivity and induced polarization methods, natural polariza-

tion, electromagnetic methods, radioactive methods, gravitation, remote sensing, air and space photography. The growing interest in archaeology resulted in a special way of development within the geophysical exploring methods, considering the special needs of archaeological prospection.

The geophysical research conducted by Nebraska University was mainly concerned with the prospection of the remains of 18-19th centuries indian villages, settlements of the pioneers and military fortresses. The results were interpreted by the help of computers.

The research group of the Alberta University performed magnetic measurements on W-Canadian prehistoric settlements, as well as experimental investigations on the determination of herds and heated rocks in respect of magnetic properties.

In the article of the Hungarian geophysicist, results of the Eötvös Loránd Geophysical Institute /Budapest/ are summarized. Exploration of Roman and Medieval settlements as well as prehistoric stone mines was reported.

The research group of the Michigan University performed magnetic and resistivity measurements on the remains of the Wilkins Fortress, which was built during the intensive copper mining of the mid-19th century /lavatory, watch-stand, carpenter's workshop and forgery/. The result were checked by analogue modelling.

A Gallo-Roman pottery workshop and Bronze age sites situated on moorlands of Burgundy and Normandy prospected by electromagnetic methods were presented by a French geophysicist. Under his supervision a device suitable for the rapid prospection of large territories were developed. The equipment suitable for continuous electrical measurements along the section was installed on a small tractor. Special electrodes were used for this measurement; with a square array the effects of anizotropy were reduced while the contact with the soil was supplied by a liquid medium.

Radar measurements were used for the prospection of a 16th century whale-hunter settlement and cemetery in Canada, attributed to the Bascs, and such measurements were performed for the prospection of the site for the new museum to be planted at Hull, Quebec. Both of the studies were successful, but additional means and efforts were necessary for the proper interpretation of the geophysical data. After the archaeological excavations the results were re-evaluated.

On the continental shelf of the Gulf of Mexico seismic measurements for oil prospecting were performed. The resolution potentials of such measurements are, in fact, not suitable for archaeological

prospection, but still they are suitable for the indication of certain geomorphological elements, in the vicinity of which is highly probable to find archaeological sites /river beds, bays, lakes/. The period in which the presence of such sites can be supposed is 25000-6000 B.C., when the shelf was not covered by seawater. There are traces of human presence from at least 12000 B.C. in this territory. The presence of archaeological sites, however, could be proved by the cores of boreholes only.

In a joint article by authors from the Federal Republic of Germany and Czechoslovakia the problems of interpreting magnetic measurement data are discussed. The aim of a proper presentation is to realize a way for the interpretation not troubled by the statistical errors of the measurements, but containing all the fine details that might be significant for the archaeological interpretation. Two case studies are presented, that is the Roman fortress in Frotzheim as well as the Colonia Ulpia Traiana and the processing of the visual data.

Archaeomagnetic studies on kilns of England and Crete are reported by a group of experts from Great Britain. Sampling techniques and its importance is stressed.

The articles give a comprehensive thought naturally not complete overview on the development of this special branch of geophysics.

From our Volume 4 Number 1 Supplement  
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#### About the organization and the aims of the Industrial Archaeology Working Group

The first Industrial Archaeology Conference in Hungary was organized in 1980. Its topic was the archaeological and scientific approaching to the kilns and furnaces discovered in the country. The setting up of an Industrial Archaeology Working Group was decided by the Conference with the aim of compiling the register of the Hungarian industrial kiln and furnace remains, workshops together with raw materials, tools, artefacts and by-products found in or near them, indicating the archaeological data and results of the scientific investigations.

The working group aimed also at making contacts with scientists who can help the archaeologists in the instrumental prospecting, dating and examination of materials.

The chairman of the working group is historian Dr. Gusztáv HECKENAST and the secretary is archaeologist dr. János GÖMÖRI.

Since 1982 the working group has informed the experts in the Industrial Archaeology News about its activity, about excavations discovering industrial archaeological objects in the country, the special literature etc.

#### About the organization and aims of the Archaeometry Working Group

The second Industrial Archaeology Conference was already organized by the Industrial Archaeology Working Group in 1982. As there was not any scientific institute dealing only with the investigation of museum objects in Hungary, the participants of the Conference proposed to the Veszprém Academic Committee to set up an Archaeometry Working Group for the coordination and support of this kind of works.

The new working group began its activity with the compiling of the list of specialists dealing with archaeometry /in part time/ in different research institutes and industrial laboratories in Hungary. One of the main aims of the working group is to ensure possibilities for these scientists -by organizing meetings and publishing together with the Industrial Archaeology Working Group the Industrial Archaeology and Archaeometry News- for the exchange of experience in archaeometric research. The working group gives information about investigation methods for archaeologists, organizes common research programs.

The chairman of the working group is chemist Prof. Dr. Miklós BAKOS, the secretaries are chemist dr. Márta JARÓ and archaeologist-chemist dr. László KÖLTŐ.



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