



Newsletter

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ASMOSIA Officers 1995 - 98

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The President's Report

In this issue, you will find a new item, an in-depth book review by John Herrmann of the important work by Patrizio Pensabene entitled, Le Vie del Marmo. I blocchi di cava di Roma e di Ostia: Il fenomeno del Marmo nella Roma Antica. All members who come across publications that they feel are of great interest to our members are also encouraged to send in critical reviews for publication in the Newsletter. Book reviews can serve an important purpose in calling member's attention to new works and could become an important part of the Newsletter.

We also send Keith Matthews our best wishes for a continued recovery from the stroke he suffered last year. Reported below in "Communications" is the good news from Mike Hughes, his colleague at the British Museum, that Keith is continuing to improve his mobility. The appearance of Keith's latest paper in Archaeometry for August, "The establishment of a data base of neutron activation analyses of white marbles" is a well-timed reminder of the important contributions that he made to help resolve problems of provenancing classical marble.

Norman Herz

"Paria Lithos" Conference

The First International Conference on the Archaeology of Paros and the Cyclades, "Paria Lithos" was held on the island of Paros in the Greek Cyclades, 2-5 October, 1997, organized by Dr. D. U. Schilardi, President of the Organizing and Scientific Committees, under the sponsorship of the Cycladic Island Council, the Demos of Paros and the Paros chapter of the "Archilochos Society". Close to one hundred people attended and over 70 papers plus some posters were presented.

"Paria Lithos" was held to address the importance of Parian marble in the creation of enduring works of art, as well as to advance the study and preservation of the quarries as archaeological monuments. The conference had fourfold objectives: 1.) to demonstrate the scientific and artistic importance of Parian Marble; 2.) to advance understanding of the role of Parian workshops in the history of Greek art; 3.) to underscore the long use of Parian marble and the functioning of the quarries from historical times (7th century BC) until the 19th century AD; and 4.) to emphasize the unique significance and the need to preserve the marble works at Marathi as a monument of world cultural heritage.

Sessions were held on the following themes:

1. Use and Trade of the "Paria Lithos:" 10 papers
2. "Paria Lithos" and its employment in Sculpture and Architecture: 17 papers
3. Paros and its Quarries from the Early Christian Period until the 19th c. AD.: 6 papers
4. Export and Diffusion of the "Paria Lithos:" 30 papers
5. Methods of Analysis Conservation and Identification of Marble: 11 papers

In the last twenty years interest has increased in efforts to protect and make appropriate use of the marble quarries at Marathi. The famous pure white, fine grained and highly translucent lychnites was mined here in underground shafts and used for some of the worlds greatest sculptural masterpieces. The staff of Paros Excavations of the Greek Archaeological Society, together with the Archilochos Society planned the conference program to promote international interest in protecting this monument of such great archaeological and cultural significance.

Major themes to emerge from the conference include:

1. The continuous use of the quarries from the 7th century BC into the Industrial Age, reflecting the continuity of artistic production in the Aegean islands. The roots of the tradition were grounded in Mycenaean times so the sculptors of Paros, both anonymous craftsmen and celebrated artists were in a position to make significant contributions to the entire history of the development of Greek art.
2. The wide physical distribution of works in Parian marble which are found from western Asia Minor to Magna Graecia and Sicily, and from the Black Sea to the coast of North Africa showing the enormous demand for the stone itself as well as the reputation of the Parian workshops.
3. Great advances in methods of archaeometric analysis allow a distinction to be made of each type of Parian marble. Isotopic and other types of scientific analysis facilitate its identification and help determine the origin of given monuments.

The final afternoon of the conference was devoted to a round table discussion on "The Quarries of Marathi, a Shrine of Art and Civilization" to find ways in which all the features of the site—the quarries, underground shafts and the 19th century industrial complex—can best be restored and protected.

The history of Parian marble was summarized by

Professor Demetrius U. Schilardi: Parian marble was used in the manufacture of Early Cycladic figurines as early as the 3rd millennium BC. Marble was obtained in various parts of the island although the most significant concentration of quarries is some 5 km SE of Paroikia in the foothills of Marpessa mountain.

At Lakkoi [called Paros 2, Chorodakia, by Germann et al in the ASMOSIA I proceedings*] many large open quarries are seen. At Marathi, one of the most renowned archaeological sites in Greece, underground quarries were worked. Here the famous lychnites was obtained, and as the name suggests, by the light of oil-lamps [called Paros 1 by Germann et al. Further up the same valley of the underground quarries are the open quarries called Paros 3, Aghias Minas, by Germann et al]. Although lychnites earned the highest reputation of the Parian marbles, all the varieties are known collectively as Paria Lithos.

Parian marble was used most intensively in sculpture and architecture beginning in the second half of the 6th century BC. In Classical and Hellenistic times, it was used extensively for the production of sculptural masterpieces. Some of these include the frieze of the Siphnian Treasury (ca. 525 BC) at Delphi, the pediment compositions of the temple of Zeus (ca. 460 BC) at Olympia, the Aphrodite of Milos and Nike of Samothrace in the Louvre (dated 4th-2nd c BC). The quarries apparently stopped operating from the 7th to the 12th c AD.

Marble was again exported to northern Italy in the 15th century during the period of Latin occupation and later during the Turkish occupation it was used in religious architecture. In 1844, a French company started commercial operations in Marathi, succeeded by a Belgian company in 1878, which finally ceased operating early in this century. The archaeological site occupies a large area represented by the valley of Marathi (Aghias Minas), the underground quarries and the 19th century group of industrial buildings built by the French and Belgian companies. The quarries were declared an archaeological site in 1974 which established a 500 m protective zone around them.

A serious problem has now arisen with the activities of a working quarry on the east flank of the same hill in which the underground lychnites quarries are located. This commercial quarry at Marathi is producing crushed stone for construction purposes but is operating within the protected archaeological zone. This operation is in clear violation of the law which protects archaeological monuments and, since dynamite is utilized in its operations, is also a serious threat to the safety of persons entering into the lychnites underground shaft.

Ways must be found and pressure applied, both by individuals and international and national agencies, on the authorities responsible for the ongoing destruction of the Parian marble monuments. If no action is taken soon, one of the most important archaeological sites of antiquity will be lost forever.

Norman Herz

*Germann, K. et al., 1988, Provenance characteristics of Cycladic (Paros and Naxos) marbles, in N. Herz & M. Waelkens, eds., Classical Marble: Geochemistry, Technology, Trade. NATO ASI Series, vol. 153, Kluwer Academic Publishers, pp. 251-262.

New Publications

Books

Ana Maria Abraldes, 1997, Pentelethen: The Export of Pentelic Marble and its Use in Architectural and Epigraphical Monuments, 517 pp., University of California at Berkeley dissertation 1996, Ann Arbor Dissertation reprint.

Roger-Alexandre Lefèvre, ed., 1997, La Pietra dei Monumenti in Ambiente Fisico e Culturale. Casa Editrice Edipuglia s.r.l., Via Dalmazia, 22b, 70050 Bari-S. Spirito Italy, 144 pp., ISBN 88-7228-175-X; (email edipuglia@mbox.vol.it); Acts of the 2nd annual course of the European school "Science and Materials of Cultural Patrimony." Papers in English, French and Italian on the stone of monuments under the action of physics and chemistry of the atmosphere, biology of the earth, property of rocks, action of climate, water and salt.

Suzanne Butters, The Triumph of Vulcan: Sculptors' tools, porphyry, and the Prince in Ducal Florence. 2 vols., 724 pp., Florence, Olschki. 88 222 44 117. Review by N. Penny in the Times Literary Supplement 04 April 1997.

Norman Herz and Ervan G. Garrison, Geological Methods for Archaeology (Oxford University Press 1997) ISBN 509024-1 (\$79.95) 352 pp.; 110 illus. This book is a primer on applying geological methods to archaeological problems, including non-traditional problems in underwater, historical, industrial and conservation archaeology. It covers a wide range of techniques and contains numerous detailed examples from the authors' own archaeological digs and from sites around the world, including the Franchti Cave in Greece, St. Catherines Island in the U.S., the Roman site of Drand in France, and Monte Verde, Chile.

Martin Maischberger, 1997, Palilia. Schriftenreihe des

Deutschen Archäol. Instituts in Rom, Bd.1: Marmor in Rom. Anlieferung, Lager-und Werkplätze in der Kaiserzeit, 250 pp., 68 illus., Wiesbaden. c 68 DM.

A. M. Pollard & Carl Heron, 1996, Archaeological Chemistry. Royal Society of Chemistry, 376 pp., \$39. Reviewed (favorably) in Geoarchaeology 12, 1997, 497-499. The summaries of analytical techniques, "the most detailed and comprehensive review in the archaeological literature." Sections on characterization of obsidian artifacts, ceramics, glass, brass, organic residues, amino acid racemization, provenience of early metals, concludes with relevance of chemistry to archaeology. "The text is partitioned such that archaeologists lacking technical training can still obtain a strong appreciation of the variety of archaeometric approaches."

M. A. Vicente, J. Delgado-Rodrigues & J. Acevedo, 1996, Degradation and Conservation of Granitic Rocks in Monuments. Protection and Conservation of the European Cultural Heritage, Research Report #5. Published by the European Commission, Directorate-General XII, science, Research and Development, B-1049, Brussels, 471pp., ISBN 2-87263-166-6.

Articles

Adam King & J. W. Hatch, 1997, The Chemical composition of jasper artefacts from New England and the Middle Atlantic: implications for the prehistoric exchange of "Pennsylvania Jasper". Journal of Archaeological Science 24, 793-812.

G. Armiento, D. Attanasio & R. Platania, 1997, Electron spin resonance study of white marbles from Tharros (Sardinia): a reappraisal of the technique, possibilities and limitations. Archaeometry 39, 309-320. ESR coupled with other methods may yield the final answer to the problem of marble provenance. Much work still must be done to standardize the data collection and analysis procedures and to expand the available data base.

J. A. Harrell, V.M. Brown, M. Masoud, 1996, Survey of Ancient Egyptian Quarries, Centennial of the Egyptian Geological Survey 1986-1996, paper no. 72 (Cairo) 3-31.

R. & D. Klemm, 1994, Chronologischer Abriss der antiken Goldgewinnung in der Ostwüste Ägyptens, Mitteilungen Deutsches Archäologisches Institut Cairo 50, 189-222.

K. T. Liliou, 1997, Amphibolite tools of the Portuguese Copper Age (3000-2000 B.C.), Geoarchaeology 12, 137-163.

L. Liritzis, P. Guibert, F. Foti and M. Schvoerer, 1997, The Temple of Apollo (Delphi) Strengthens Novel

Thermoluminescence Dating Method, Geoarchaeology 12, 479-496. The Temple of Apollo built in 550 B.C. has reconfirmed a novel method of dating carved megalithic stone buildings using thermoluminescence (TL). A marble sample taken from the western side of the polygonal wall dated by partially bleached TL methodology gave an age of 420 ± 300 B.C.

S. Mandal, 1997, Striking the balance: the roles of petrography and geochemistry in stone axe studies in Ireland, Archaeometry 39, 289-308.

S. Mandal, et al., 1997, Using geochemistry to interpret porcellanite stone axe production in Ireland, Journal of Archaeological Science 24, 757-764.

K. J. Matthews, 1997, The establishment of a data base of neutron activation analyses of white marbles, Archaeometry 39, 321-332. 183 NAA of marble from 8 quarrying localities with results of multiple samples from single museum objects. Data are a measure of the accuracy and precision of the technique as well as allowing an assessment of the variation in trace element composition within quarry sources and single blocks of marble. Quarry sources include those at Aphrodisias, Carrara, Dokimeion, Ephesus, Paros, Penteli, Proconessus, and Thasos.

D. Peacock & V. Maxfield, 1997, The Roman Imperial Porphyry Quarries: Gebel Dokhan, Egypt. Interim Report, 1977, Department of Archaeology, University of Southampton, 1-32.

M. A. Smith & S. Pell, 1997, Oxygen-Isotope ratios in quartz as indicators of the provenance of Archaeological ochres, Journal of Archaeological Science 24, 773-778.

Book Review

by John Herrmann, Curator, Department of Classical Art, Museum of Fine Arts, Boston, MA 02115

Patrizio Pensabene, 1994, Le Vie del Marmo. I blocchi di cava di Roma e di Ostia: Il fenomeno del Marmo nella Roma Antica. Ministeri per I Beni Culturale e Ambientali. Soprintendenza Archaeologica di Ostia, Rome. Introduction by Anna Gallina Zevi, 429 pp., 413 figures (32 in color).

Patrizio Pensabene is one of the most distinguished students of Roman architectural decoration, and he has long given much attention to the sources of the material used and the mechanisms by which the raw materials and the finished products were distributed around the Mediterranean. This new work takes as its point of departure a catalogue of the unfinished

marble products, both rough blocks and partly worked architectural elements, found at Ostia and along the Tiber near the ancient harbor at Portus (modern Fiumicino).

The material, totaling some 193 entries, has Bern collected, drawn, and photographed over the years by the Archaeological Superintendency of Ostia. To this is added another 52 unfinished pieces that had reached Rome and are now stored at the Theater of Marcellus and in the Antiquarium on the Celio. As a whole, this assemblage provides a sober, yet extremely vivid, document of the workings of the ancient marble trade. In part, the results are complementary to studies of quarries like those of Nusin Asgari for the Proconnesos; partly finished capitals and bases of the types found in the quarries also turn up along the Tiber. In some cases rarely documented arrangements appear, such as column shafts sent out in clusters of four, which were intended to be separated at their destination.

In the introduction to the catalogue, Pensabene provides a summary of what is known of the provenance of the material, which ranges from recent excavation reports to records of finds of similar materials in past centuries. Since the Renaissance, the Tiber banks have been famous for their treasures of marble, and the subject has its own elaborate historiography. Pensabene also reconstructs a "statio marmorum" just before the entrance to the Port of Trajan on the northern branch of the Tiber mouth (the canal dug under Trajan), where most of the marbles seem to have been found. In this area, marbles were apparently unloaded and parked for transfer from sea-going boats to river craft for the trip to Rome and beyond. Pensabene summarizes his and others' studies of the inscriptions.

Since the consular dates range from A.D. 80 - 164, it is likely that most of the marble was accumulated around that time. The rarity of dates suggests that their occurrence is connected with special administrative initiatives. Inscriptions also prove that the second century stockpile was still being drawn on in new construction of the late fourth century. Pensabene identifies the quarries from which blocks came, usually by eye, but in a few cases with the support of isotopic analysis. Inscriptions also help with identifications: the name of the *rationales* Hermolaus appears on blocks found on Paros and on blocks at Fiumicino that appear to be Parian. Pensabene tabulates the quantities of the various colored marbles: in descending order of frequency, the most popular are cipollino, africano, pavonazzetto, and giallo antico.

Pensabene offers sensible and often ingenious explanations for the peculiarities of the material from

Portus. Grey and white marble proves to have been shipped in very crudely shaped blocks, while colored marbles were squared off, often in an elaborate series of steps. Turning the marble into simple rectangular prisms would have wasted too much of the valuable material. Turning irregular protuberances into steps readied the blocks to be cut into strips for the incrustation of walls or floors. Apparently customers did not want to pay high prices for unusable rounded lumps. Marks and dates tended to be placed only on colored marbles and on white Parian marble, which was evidently prized highly as well.

Pensabene also describes restorations that apparently compensated for defects or damage. Flaws in colored column shafts were reinforced with iron clamps, and dull spots were cut away and replaced with patches of more brightly colored marble to enhance their commercial value. Some defective shafts were cut up into roundels for revetments. Pensabene appends an investigation of the shafts left in the quarries of cipollino at Carystos on Euboea and finds that the kinds of repairs with clamps seen at Portus can already be traced in the quarries. Nevertheless, he feels that some of this repair work also went on in the Statio Marmorum at the Tiber mouth, presumably since defects would have become more evident during shipment.

The different stages in the production and distribution of capitals and bases is reviewed. He notes how in the earlier Imperial period, such material was shaped roughly, merely to reduce its weight. In the fourth and fifth centuries, on the other hand, capitals were shipped in a finished or nearly-finished state. Major commissions went to Rome, apparently for specific public works, while Ostia imported only shipments of small-scale elements, which went into marble yards for resale on a piece-by-piece basis. He offers valuable observations on the fourth-century Volusianus marble yard, separating the bulk of the 42 very similar shafts into two groups, which he attributes to Thasos and the Proconnesos on the basis of their isotopic signatures.

The second part of Pensabene's work is a comprehensive review of marble and marbleworking in the Roman world. He deals with literary sources, the takeover of Greek traditions, the expansion of quarrying, typical products of the various quarries, the issue of state ownership, methods of work, traveling workshops of sculptors, prefabrication of sculpture, the system of administration, the different historical phases in the marble trade and many other subjects. The sections that deal with marks on blocks, methods of extraction, and the use of colored marble for architectural elements, table supports, and basins are well illustrated; the section on architectural elements is

especially new in terms of the material covered. Throughout, telling use is made of provenanced material, which often is either long neglected or recently excavated. An extensive and up-to-date bibliography concludes the book. In essence, this is ambitious, first-rate handbook on marble in Roman antiquity lurking at the rear of an unpretentious and equally excellent catalogue.

For all its merits, the book also has its defects. The illustrations are rather lack-luster for a handbook. Many place-names mentioned in the catalogue are not located in the maps and will be familiar only to experts on Ostia. There are editing problems: figures 18 and 22 are said to show the same capital, but have radically different proportions. On page 86, cat. no. 30 is fig. 110 (not fig. 10). Sentences twelve lines long (as on pp. 34-35) are rather turgid to the American ear. There are a few minor issues of substance to question as well. An unfinished statuette called Dionysos and Ariadne (fig. 335) must show members of the god's retinue, probably Priapus and a Maenad, since Dionysos is not shown bearded in such compositions.

This writer's own interests makes him sensitive to Thasian being pushed aside in favor of Proconnesian identifications. Pensabene's indecision about whether a typical Thasian Ionic might actually be from the Proconnesos (p. 186, no.174, fig. 216) has now been resolved in favor of Thasos he informs me privately. He seems overly inclined to attribute all greyish, coarse-grained column shafts to the Proconnesos, even when they lack the characteristic Proconnesian striping. He assembles an interesting group of unstriped shafts marked DNGF, but his identification of them as Proconnesian is less satisfying (pp.163, 171, 181, 195, 337, fig. 210, cat. nos. 148, 149, 192, 193). This writer has previously identified the pair of shafts in Ss. Giovanni e Paolo at Rome as Thasian, in a work that Pensabene cites, but whose content he does not acknowledge in this instance (p.195). From Pensabene's photograph (fig. 210), one of the DNGF shafts from Portus could be Thasian as well. It might be added that yet another shaft inscribed DNGF, also apparently Thasian marble, is in S. Clemente.) Pensabene, on the other hand, affirms (perhaps overgenerously) that Thasian marble was imported for architecture at Rome from the time of Domitian onward (p.335); this writer knows of no example earlier than the late third century (although white sculptural marble from Cape Vathy on Thasos was imported as early as the Julian-Claudian period).

Such differences of opinion, of course, spotlight the principal problem facing this kind of study: the lack of sufficient scientific testing in support of identifications of grey and white marbles. Even ratios of stable isotopes of carbon and oxygen usually cannot give an

unequivocal answer by themselves; some additional technique, such as petrographic analysis or cathodoluminescence, is normally required to resolve ambiguities. Nonetheless, Pensabene focuses most of his attention on colored marble where an experienced eye is still the most valuable instrument for marble identification. Since Pensabene such a comprehensive knowledge of the field and such an impressive command of the situation at the center of the Empire, the book is an indispensable reference for all those interested in what Pensabene calls "the phenomenon of marble in late Republican and Imperial Rome."

Communications

"TRANSACTIONS ASMOSIA IV." Bordeaux, 9-13 Oct, 1995. Publication is scheduled for April, 1998 by the Center de Recherche en Physique Applique l'Archeologie, Maison de l'Archeologie, Universit de Bordeaux 3, Talence, France. 44 articles have been accepted plus 3 introductory papers.

Michael Hughes of the British Museum sends this latest word on Keith Matthews. Keith, one of the founding members of ASMOSIA, suffered a stroke last year, but has now improved his mobility considerably. For those who wish to send him best wishes, his new address is Copper Beeches, Red Lane, Limpsfield, Oxted, Surrey RH8 4LZ.

The Wiener Laboratory of the American School of Classical Studies at Athens announces for 1998-1999 avResearch Fellowship in Geoarchaeology. Applicants must have a well-defined project which should address significant archaeological questions in areas of study which may include quarried stone, lithics, building materials, ceramics, soil and sediment studies. The appointment will be for one academic year, beginning 15 September 1998. For further information, contact the Director, The Wiener Laboratory, American School of Classical Studies at Athens, 54 Souidias Street, Athens GR 106-76, Greece (tel (30-1) 723-6313 or fax (30-1) 729-4047). Deadline for applications is 05 February 1998.

AEGEANET has set up a web page for Aegean in the Neolithic, Chalcolithic and Early Bronze Age International Symposium, Urla-Izmir at: <http://www.geocities.com/Athens/Forum/8635/> Information about Urla, the Symposium and the work of IRERP (Izmir Region Excavations and Research Project) will be found there. IRERP address: Ankara Universitesi, Dil Ve Tarih, Cografya Fakultesi, Protohistorya ve Onasya, Arkeolojisi Anabilim Dalı, 06100 Sıhıye, Ankara Turkey. phone 312/ 3103280/ 1133 or 2133864, email hayat@rorqual.cc.metu.edu.tr

The new web site "Teaching Archaeometry" is now available at: <<http://www/grad.uiuc.edu/departments/ATAM/teach-arch.html>> The purpose of the site is to provide resources for the teaching of archaeometry/archaeological science. It includes background on the field, course syllabi from several universities, a "Forum" for postings on curriculum and training issues, and other web links. Feedback is welcome. Director of the site is Sarah Wisseman <wisarch@uiuc.edu>

Calendar (*=new items or information)

1997

Sep. 21-27. XIII International Symposium on Environmental Biogeochemistry, Monopoli (Bari) Italy. Special session of weathering processes of monuments and techniques of diagnosis. Information Prof. Nicola Senesi, XIII ISEB, Istituto di Chimica Agraria, Univ. di Bari, via Amendola 165A, 70126 Bari, Italy. tel. 39-80-5442853, fax -5442813, email nsenesi@mail2.clio.it

Oct. 20-23. Geological Society of America, Annual Meeting, Salt Lake City, Utah, USA. Contact GSA 3300 Penrose Place, Boulder, CO 80301. tel. 303-447-2020, fax 303-447-1133.

Dec. 1-5. Materials Research Society, Fall Meeting, Boston, Mass., USA. Contact Materials Research Society, 9800 McKnight Road, Pittsburgh, PA 15237 USA. tel. 412-367-3003, fax 412-367-4373. <http://www.wisc.edu/anthropology/sas/184D.htm>

Dec. 27-30. Archaeological Institute of America, Annual Meeting, Chicago, IL USA. AIA 656 Beacon Street, Boston, MA 02215-2010

1998

*March 24-28. Computer Applications in Archaeology, Barcelona. Information Dr. Juan A. Barcelo, ilphd@blues.uab.es; web page <http://blues.uab.es/~ilphd/ca98.html>

Apr. 27-May 1. International Symposium on Archaeometry -1998, Budapest. Information in Dec '96 newsletter.

June 10-15. ASMOSIA 5, Boston. Information in March '97 newsletter, registration information in this newsletter.

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