

# ASMOSIA

## Newsletter

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### Report from the President

At the General Meeting concluding our very successful Fifth International Conference held at the Museum of Fine Arts in Boston (see the relevant report in this newsletter), I was elected the new president of ASMOSIA. It is a great honor for me to be the second president after Norman Herz, one of the founders of ASMOSIA and a leading scientist in our fields of study. I wish once more to thank him personally for sponsoring my election, and express my gratitude to all the colleagues who trusted and elected me at Boston.

As I did very briefly in Boston, I want first of all to thank Norman again for the great deal he did for ASMOSIA: we owe him a good part of the remarkable reputation of our Association and of the success of our meetings. He has served ASMOSIA not only as a perfect president, but also as an ambassador in many scientific contexts, as an efficient fund raiser, etc., and it will be difficult to reach his level. I want also to thank him for the invaluable scientific contribution he has given to the archaeometry of stones and marbles used in antiquity. I remember starting my first studies on white marbles in the seventies based on his pioneering petrotextonic papers of the fifties: since then he has produced a vast wealth of studies, mostly in the isotopic field of ancient marbles, that will remain a basis of reference for many

*(continued on page 2)*

### From the Editor

This is the first *ASMOSIA Newsletter* to appear since I was appointed Editor following the ASMOSIA V meeting in Boston last summer. We apologize for the delay in the appearance of this issue, and plan to get back on our regular publication schedule of two or three newsletters per year. Your help in providing material for the newsletter is essential. Please send us any information that might be relevant to our members, especially publication announcements (books, articles, and abstracts of them if they are available), meeting notices, conference reports, summaries of your own research, etc. If possible, please send your information to the Editor via email ([rtykot@chumal.cas.usf.edu](mailto:rtykot@chumal.cas.usf.edu)).

The ASMOSIA website has also moved to the University of South Florida (<http://www.cas.usf.edu/asmosia/index.html>) and is in the course of a major facelift. We will continue to publish back issues of the *Newsletter*; and will add the paper/poster abstracts from ASMOSIA V, relevant links, and other useful information. The website will be updated frequently, so check the website regularly for conference information and other timely material. In the coming months, please give us some feedback on its content; your suggestions and contributions are welcome.

Lastly, I would like to thank Norman Herz and Susan Kane for their long service as Editors of this Newsletter.

*Robert H. Tykot*

## Report from the President (continued)

years. Apart from these great scientific merits, I have personally always appreciated his understatement and great affability. I am sure that Norman will continue to serve ASMOSIA with advice and suggestions (not only because he is now our honorary president), and that he will remain scientifically productive for many years to come: best wishes Norman!

This is my first report, thus a particularly appropriate one to define the future lines of my presidency and in fact, I want to profit from this opportunity to present my ideas for the near future of ASMOSIA. First of all, I am convinced that we should continue with the general guidelines we have been following since the very foundation of ASMOSIA, the most important of which is the close dialogue between archaeologists and archaeometrists. ASMOSIA is one of the very few associations dealing with the past in a really multi-disciplinary way: its meetings have always been successful in having a good mix of all categories of scholars interested in ancient stones. We should continue with this tradition, and eventually improve it through the open forum of our *Newsletter* and at our future meetings. I think, for example, that archaeologists should point out important problems that may benefit from the collaboration of archaeometrists, and suggest research subjects to them.

Our society is not sufficiently known, especially among archaeologists, and I think that if we would like to have more success in the diffusion of the results of our research, more chances for their financing, etc., we need to be better known, i.e. we need some advertising! To this end, every associate is warmly invited to make the best possible propaganda for ASMOSIA and its activities. We are still poorly represented, or not represented at all in many important countries such as those of Eastern Europe, North Africa, the Middle East and Far East, India, etc. I am sure that we can grow to a stable membership of 500 worldwide, which may also mean a larger contributing base (at all levels), the possibility of a future self-financing publication (for example of an occasional paper), etc. Our *Newsletter* is a very important working tool, and I invite you all to

contribute to it as much as possible with information, suggestions, etc.; we may also think, in the near future, of accepting short papers (1-2 pages), for example on the preliminary results of ongoing research on new specific subjects.

Another important point I want to raise is about the proceedings of our conferences: as observed by Norman, it is true that each volume so far published has become a standard reference in our field. We should do our best to maintain this internationally recognized high standard, and reduce as much as possible the publication time: the three years time elapsed since ASMOSIA IV (and we are still waiting for the volume!) is not acceptable. Such a delay is discouraging the publication of important papers in the proceedings of our conferences, and we should avoid what happens with most other conferences: the presentation of papers at our meetings followed by publication elsewhere. The volumes of our meetings are also somewhat difficult to get; ASMOSIA I is out of print, and only a few copies are available of the other proceedings. We should think of a re-printing.

As already announced in the last *Newsletter* and at Boston, the next meeting will be organized by me, and will take place in Venice, most probably in June 2000. As you know, there will be the jubileus of the catholics in that year, which will drive a large amount of pilgrims and tourists to Rome and other major Italian touristic destinations, including Venice. So if you intend to participate, you are advised to strictly follow all the instructions you will receive the next year.

I am confident of your help at all levels, and wish you all the best!

*Lorenzo Lazzarini*

### **ASMOSIA VI, Venice, Italy**

tentative dates June 15-18, 2000

<http://www.cas.usf.edu/asmosia/index.html>

### **Building Stone in Archaeology Conference**

Southampton, October 1999

<http://easyweb.easynet.co.uk/~ian.windsor>

Please submit abstracts by end of February 1999

## Thessalian *verde antico*

Olga Karagiorgou is a D.Phil. student in Byzantine Archaeology at the University of Oxford and an ASMOSIA member. Her D.Phil. thesis is entitled “The Archaeology of Early Christian and Dark Ages Thessaly” and is supervised by Dr. M. Mango (St. John’s College, Oxford). Part of her thesis concentrates on the exploitation of the Thessalian quarries, which were in operation during Late Antiquity. One of these is the so-called “Chasambali” or “Omorphochori” quarry (situated ca. 10 km NE of Larisa), which produces a very distinct, green breccia, known as “verde antico”. She visited the quarry in August 1996 and last May presented a paper with the preliminary conclusions of her research at the International Symposium on “New Approaches to Medieval and Post-Medieval Greece”, which was organised by the British School at Athens and the Ionian University, on Corfu, 1-3 May 1998. Olga would be most interested to hear from any ASMOSIA members who might either have information on the topic or similar interests, as well as from members who would be interested in applying physical methods on the marble furnishings of Thessalian basilicas in order to determine which local quarry provided their marble. The abstract of her paper follows, while the paper itself will be published in the proceedings of the Symposium.

### **“and the marble which the land of Atrax yields....”: Thessaly’s contribution to Byzantine art**

In his poetic description of Saint Sophia, recited early in 563 AD, Paul Silentiary refers to the columns in the Great Church as “glittering jewels of Thessalian marble graced with locks of golden hair” and he adds that “Never were such columns, high-crested, blooming like a grove with bright flowers, cut from the land of Molossis”.

The archaeological and literary evidence further confirms the high regard that the Byzantines had for the Thessalian stone, which was reserved for the construction of a number of ecclesiastical and secular

buildings, most of which were directly or closely linked with imperial initiative, i.e. the church of Sts. Sergius and Bacchus (527-536 AD), St. Sophia (532-537 AD), Basilica B at Philippi (ca. 540 AD), and a number of palace structures attributed to the building programs of Theophilus (829-842 AD) and Basil I (867-886). The most famous application of the Thessalian stone, however, is in the construction of imperial sarcophagi. According to the *Catalogus sepulchrorum* and other Byzantine sources, as well as, the Latin *Chronicon Altinate*, nine Byzantine emperors and nine imperial relatives were buried in sarcophagi made of green Thessalian stone, during the period from the mid. 5th to the early 10th century.

This highly praised stone, today known as “verde antico”, “Omorphochori” or “Chasabali” marble is the product of the quarries, situated ca. 10 km. NE of Larisa, to the N of the village of Chasabali (modern Omorphochori), on the south side of a hill which rises to ca. 250 m. above the Larissa plain. Sparse information on the quarries, as regards their geological configuration and traces of ancient working, is found in a number of geological studies as early as 1879.

The aim of the present paper is to draw up a catalogue of the verde antico applications and then use it together with any other information, in order to provide answers to problems such as the chronological frame and the density of the exploitation of the quarries and its impact on the economy of Thessaly: the relevant size of the internal (within Thessaly) and external (outside Thessaly) consumption of the material, the possible trade connections between Thessaly and other places of the empire, the specialisation - if there was any - of the quarries in providing raw material for a certain kind of architectural element and the organisation of the Thessalian marble trade (administration of the quarries, existence of local sculpture workshops, transport routes and exportation ports).

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## New Museum at Chimtou Quarries

A museum by the marble quarries of Chimtou, Jendouba province-Tunisia has been opened. It was installed by Roman archaeologists Martin Hartmann and Christoph B. Rueger. The museum comprises the geology and early Berber and Roman history of the area of the famous quarries of marmor Numidicum near ancient Simitthu (*colonia Iulia Augusta Numidica Simitthensium*). It displays the results of 25 years of research at Simitthus by the German Archaeological Institute in Rome (Friedrich Rakob). All informational material in the 1500 sq. m display is trilingual (Arabic, French, German). There is no English version, but there is a web page with plans and information in English which may be downloaded and printed before visiting the museum: <http://www.chimtou.com>. A scholarly bibliography on Simitthus will be added in the near future along with the results of new research.

*Christoph B. Rueger, C.B.Rueger@t-online.de*

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## The Ancient Naxian Marble Quarries

(summary of the article by G. Kokkorou-Alevras, *Archaiologiki Ephimeris* 131 (1992) 101-126)

The ancient marble quarries at inland Melanes and at Apollonas in the Northeast corner of the island have been known to archaeologists since the first half of the 18th century. Recent finds, which yield a closer dating and enable us to study the character and productivity of the quarries, make a new discussion of the whole subject worthwhile.

The Melanes quarries were first opened by the end of the 7th cent. B.C. at the latest. This is clear from one of the unfinished kouros found in the Melanes era, which is datable to that time (fig. 10). The quarries continued to be exploited at least until the time of Lygdamis (540-524 B.C.), which is the date also of the unfinished threshold at the Melanes quarries, which was designed for the Apollo temple at Palatia in Naxos. Evidence for the opening of the Apollonas quarries would seem to be slightly later. They were functioning already by around the middle of the 6th

cent. B.C., to judge by the well known unfinished kouros in the National Museum of Athens, no. 14 (fig. 15) and its stylistic relation to the Naxian kouros torso in Berlin. Both figures seem to have been products of the same workshop established close to the Apollonas quarries. The Apollonas quarries continued to be worked down to the end of the Archaic period, a date provided by the colossal statue of Dionysos lying there where it was abandoned (fig. 11). Naxian sculpture however makes its appearance as early as the middle of the 7th cent. B.C. - perhaps in connection with the Melanes quarries. That it continues to be produced on into the Christian era is shown by some unpublished sculptures in the Naxos Museum and by a number of Naxian buildings.

The use of Parian and Thasian marble for sculpture evidently began almost as early, yet their use appears to be sporadic, and restricted in comparison to the exportation and wide use of the Naxian product in the 7th and first half of the 6th cent. B.C. During that time, Naxian marble was used not only in Naxos, but also in other archaic Greek workshops (Samos, Attica, Argos, Cyclades, Greek colonies of the West). It is probably because of its quality and for historical reasons that Naxian marble disappears from the Greek marble "market" after the Archaic period.

These facts considered together with the unfinished architectural members and two other marble objects (figs. 8-9) found in the Melanes quarries, show that the Naxian quarries were in permanent use and not opened exclusively in connection with the colossal kouros found in situ (figs. 3, 4, 11). A preliminary survey of the Melanes and Apollonas quarries confirms the high productivity and the permanent character of the Naxian quarries. Both sites have a great number of quarrying pits with the characteristic ancient quarrying marks, dispersed over wide areas and lying close to each other. This is typical of surface or horizontal exploitation of marble as opposed to the deep and heavy or vertical exploitation known from other ancient Greek quarries (Pentelicon, Docimion etc.). The absence of installations usual in the quarries (shrines, settlements, workshops) is probably a result of the extension of the modern village of Apollonas into the ancient quarry sites. Their absence at Melanes may be due to the lack of systematic survey there.

## Report on the ASMOSIA V Meeting Boston, June 11-15, 1998

The 5<sup>th</sup> ASMOSIA meeting was held at the Museum of Fine Arts, Boston, 11-15 June 1998, organized by Dr. John J. Herrmann, Curator of Classical Art. The meeting was a success in all respects, both scientific and organizational: more than 100 people, many of whom came from Europe (with a majority of Italians) in spite of the high travel and accommodation costs in the USA, attended the 8 very tightly programmed oral and poster sessions. 74 papers (including posters) covering many topics related to the history of use, quarrying and working, authenticity, identification by laboratory methods, trade, etc. of stones and marbles were presented. The total number of papers was almost identical to that of Bordeaux, and this may indicate that we have reached a sort of plateau in our meetings. As regards subjects, the characterization of previously uninvestigated stones and marbles, and the identification of marbles of ancient monuments, largely prevailed. Apart from developments and updating of ESR and petrographic-isotopic databases, very little of new and general scientific interest was presented. Case studies, sometimes very extended and complete, were very abundant. With respect to people, it was regrettable that very few young students and "new faces" were seen, but this may again be due to the expensive (with regards to travel costs) place where the meeting was held. Anyway the problem should be faced in the near future, and ways of encouraging the participation of young people, for example with grants, should be found.

My general impression was that this meeting was still in keeping with the original spirit of ASMOSIA, a forum for archaeologists and scientists presenting the results of their common studies, but with the beginning of a prevalence of the scientific aspect. Archaeometrists were in fact more numerous than the archaeologists, and the latter did not contribute sufficiently in exposing their problems and needs to the former. Of course we cannot force our colleagues to do what we would like them to do, but I invite all



From left to right: Yannis Maniatis, President-Elect; John J. Herrmann, Jr., organizer of ASMOSIA V and a new board member; Norman Herz, now Honorary President; Susan Kane, board member; Robert Tykot, new Editor of the *ASMOSIA Newsletter*; Lorenzo Lazzarini, new President; and James A. Harrell, new Secretary-Treasurer.

the ASMOSIA associates to read again and meditate upon the very illuminating editorials of Marc Waelkens in our *Newsletter* 8. and of David Peacock in 8.3: they are both still valid. Another weak point of the meeting was the lack of time for exhaustive discussions, that in several cases had to be cut short because of the very tight schedule. I think I will encourage the presentation of posters for ASMOSIA VI.

The organization of the meeting by John Herrmann and his colleagues was perfect, apart from their weak influence on the weather-maker. Anyway, I am sure the Mediterranean participants have already forgotten the very heavy rain of the last days!

The closing evening of the meeting was devoted to the General Assembly of ASMOSIA. Norman Herz announced his intention to retire as president and remembered that according to our by-laws, there should be 6 officers in the Council, of which two rotate, and a new one is voted. He also remembered that it is the retiring Council that elects the new president. He proposed that myself, being the first vice-president, should take the place of president with the duty (becoming a rule from now on) of organizing the next meeting, and John Herrmann that of the new officer "ex officio" having organized the Boston meeting. Yannis Maniatis will take the presidency after the next meeting which will be held in Venice, probably June

15-18, 2000. All proposals were taken unanimously by the Assembly. Herz also proposed James Harrell as secretary-treasurer, and Robert Tykot as editor of ASMOSIA's *Newsletter*, and left the floor greeted by a long applause. The new president, Lorenzo Lazzarini addressed a short speech to those present, first of all thanking Norman Herz for having served the society so well and for so long, and for his outstanding scientific contribution to the archaeometry of marbles and stones. He also proposed to nominate Norman Herz honorary president, with the hope that he will continue to help ASMOSIA with his prestige and advice. The proposal was unanimously taken by the Assembly. Finally Lazzarini officially invited all those present and other ASMOSIA associates to attend the VI ASMOSIA meeting in Venice in the spring of the year 2000, and closed the meeting. At that point, the evacuation of the Museum was not possible as a fierce storm was trying to flood Boston, so that a free, interesting discussion on the state of the art and problems of our studies was started among the courageous and exhausted remaining. The main theme was, as usual the relationship between scientists and archaeologists. Waelkens raised several points (which he promised to resume in a written contribution to the *Newsletter*), among which were the lack of an archaeological strategy in many of the papers presented to the meeting, and the concentration on the enlargement of databases of many scientific contributions. Harbottle and Lazzarini stressed the fact that basic research on analytical methods and the creation of databases should proceed in a parallel way with the solution of archaeological problems for the progress of our science. Maniatis and Herz contributed to these points, the first also discussing the need for sufficiently large samples from monuments to be able to perform a multi-analytical investigation. Amanda Claridge, Eric Doehne and others participated with further points in the discussion which in the end resulted very usefully, suggesting that such a general discussion should be introduced at the beginning of each assembly of our society.

*Lorenzo Lazzarini*

## New Publications

**Marmi Antichi II**, edited by P. Pensabene. l'ERMA di Bretschneider, Roma, 1998. Studi Miscellanei 31, Dipartimento di Scienze Storiche, Archeologiche e Antropologiche dell'antichità dell'Università di Roma "La Sapienza". 460 pp., Lit. 500.000.

Includes: Aggiornamenti, nuove acquisizioni e riordino dei marmi di cava dal canale di Fiumicino (P. Pensabene, M. Bruno); la provenienza dei marmi cristallino usati in antico: un problema aperto (M. Mariottini); Automatic classification of marbles by means of Digital Image Processing (A. Alvarez I Perez, B. Obelíc, D. Haye, J. Serrat I Gual); Determinazione della provenienza dei marmi usati per alcuni monumenti antichi di Roma (M.L. Amadori, L. Lazzarini, M. Mariottini, M. Pecoraro, P. Pensabene); Sulla provenienza senese della «Breccia Dorata», «Breccia Gialla» e «Breccia Gialla Fibrosa» (L. Lazzarini); Su un blocco di «Breccia Dorata» dal canale di Fiumicino (M. Bruno); Approccio metodologico per il riconoscimento della pietra antica: l'esempio della «Puddinga di Hereke» (E. Ducrot); Note storico-scientifiche sul broccatello di Spagna (R. Falcone, L. Lazzarini); Sobre las calizas amarillas de la franja costera de la Hispania Citerior (M. Mayer); Sul «Marmo Misio», uno dei graniti più usati anticamente (L. Lazzarini); Isola del Giglio, la cava di granito del Foriano presso Giglio Porto (M. Bruno); Il problema del bigio antico e del bigio morato: contributo allo studio delle cave di Teos e di Chios (P. Pensabene, L. Lazzarini); Contributo allo studio delle cave di Lesbo (P. Pensabene); Su un inedito cipollino verde tenario (L. Lazzarini); Su una cava di alabastro del Circeo in località la «Batteria» (M. Bruno); *Sectilia pavimenta* dell'area vesuviana (F. Guidobaldi, F. Olevano); *Interraso marmore* (Plin., *N.H.*, 35, 2): esempi della tecnica decorativa a intarsio in età romana (A. Bonanni); Sulla tecnica di lavorazione delle colonne in marmo proconnesio del portico in *Summa Cavea* del Colosseo (P. Pensabene); Le colonne sbazzate di cipollino nei distretti di Myloi e di Aetos (Karystos) (P. Pensabene); Su un fusto colossale di cipollino sopra le cave di

Kylindroi nel distretto di Myloi (M. Bruno): Il fenomeno del marmo nella Roma tardo-repubblicana e imperiale (P. Pensabene); La Collezione ex Kircheriana di diaspri siciliani del Museo di Mineralogia alla «Sapienza» (P. Evangelista, L. Lazzarini); Due collezioni ottocentesche di marmi antichi del Museo di Mineralogia dell'Università della Sapienza a Roma (P. Evangelista, L. Lazzarini); «Esperimenti pel risanamento dei marmi»: trattamenti chimici nel restauro dei monumenti veneziani alla fine del XIX secolo (A. Pambeni). This book is accompanied by a photographic guide, *Il Marmo e il Colore* by P. Pensabene and M. Bruno, Lit. 40.000.

**Archaeological Obsidian Studies: Method and Theory.** Advances in Archaeological and Museum Science, volume 3. Edited by M. Steven Shackley, University of California, Berkeley. 1998. ISBN: 0-306-45804-7. 237 pp. (cloth). \$49.50 (US and Canada); \$59.40 (elsewhere). Text adoption price on orders of six or more copies: \$29.50 each.

#### Description

The use of obsidian archaeometry has expanded dramatically in the last 20 years, due partly to technological advances and partly to recognition by archaeologists that archaeometrists provide much more information than mere measurement. Since the mid-70s, however, no book has appeared to document the latest advances. *Archaeological Obsidian Studies*, the only volume of its kind in print, corrects this situation by presenting the current state of the science, from volcanic glass geochemistry to hydration analysis. Archaeologists, museum professionals, geologists, materials scientists, and students will find this volume to be an indispensable guide to modern archaeometric theory and methodology in the lab and in the field.

#### Contents

Current Issues and Future Directions in Archaeological Volcanic Glass Studies: An Introduction (M.S. Shackley); A Systematic Approach to Obsidian Source Characterization (M.D. Glascock *et al.*); Mediterranean Islands and Multiple Flows: The Sources and Exploitation of Sardinian Obsidian (R.H. Tykot); Intrasource Chemical

Variability and Secondary Depositional Processes: Lessons from the American Southwest (M.S. Shackley); Characterization of Archaeological Volcanic Glass from Oceania: The Utility of Three Techniques (M.I. Weisler, D.A. Clague); Application of PIXE-PIGME to Archaeological Analysis of Changing Patterns of Obsidian Use in West New Britain, Papua New Guinea (G.R. Summerhayes *et al.*); Factors Affecting the Energy-Dispersive X-Ray Fluorescence (EDXRF) Analysis of Archaeological Obsidian (M.K. Davis *et al.*); Laboratory Obsidian Hydration Rates: Theory, Method, and Application (C.M. Stevenson *et al.*); Obsidian Hydration Dating at a Recent Age Obsidian Mining Site in Papua, New Guinea (W.R. Ambrose); Perspective in the 1990s on Method and Theory in Archaeological Volcanic Glass Studies (R.C. Green); Index.

**Geological Methods for Archaeology.** Norman Herz & Ervan G. Garrison, Oxford U Press, 1998. 352 pp., 79 linecuts and 31 b/w photos, ISBN: 0-19-509024-1 (cloth \$75.00)

**Geoarchaeology: The Earth-Science Approach to Archaeological Interpretation.** George (Rip) Rapp, Jr., and Christopher L. Hill, Yale University Press: New Haven and London, 1998. xiii + 274 pp., 80 figures, 4 tables, 1 appendix, notes, glossary, bibliography, inde. \$40.00 (cloth), ISBN 0-300-07075-6; \$22.50 (paper), ISBN 0-300-07076-4.

**Lithics. Macroscopic Approaches to Analysis.** William Andrefsky, Jr., Cambridge University Press: Cambridge, 1998. \$69.95 (cloth), ISBN 0-521-57084-0; \$27.95 (paper), ISBN 0-521-578159.

**Prehistoric Long-Distance Interaction in Oceania: An Interdisciplinary Approach**, edited by Marshall I. Weisler, New Zealand Archaeological Association Monograph #21, 1997, ISBN: 0-9597915-4-X, NZ\$45.00.

#### Articles

Anderson, A., W. Ambrose, F. Leach & M. Weisler. 1997. Material sources of basalt and obsidian artefacts from a prehistoric settlement site on Norfolk Island, South Pacific. *Archaeology in Oceania* 32(1): 39-46.

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## Harmon Craig Awarded Balzan Prize

Harmon Craig, a professor of oceanography and geochemistry at the Scripps Institution of Oceanography, University of California, San Diego, has been awarded the Balzan Prize for his fundamental contributions to the field of geochemistry. The Balzan Prize of the International Balzan Foundation of Milan, Italy, has several times been given in astrophysics and geophysics, but this is the first award in geochemistry.

Craig was presented with the award by the President of Italy at a ceremony held in the Palazzo del Quirinale in Rome on Nov. 23, 1998. The Balzan Prize is considered the equivalent of the Nobel Prize in the fields of natural sciences, humanities, social sciences and international affairs that are not in Nobel awards categories. The Balzan Prize was established in 1961 by the late Italian heiress Lina Balzan in memory of her father, publisher Eugenio Balzan (more information on the Balzan Prize can be found at <http://www.balzan.it/newsgb.htm>).

Craig was recognized by the Balzan Foundation for his work as “a pioneer in earth sciences who uses the varied tools of isotope geochemistry to solve problems of fundamental scientific importance and immediate relevance in the atmosphere, hydrosphere and solid earth.”

Born in New York City on March 15, 1926, Craig did his thesis on carbon isotope geochemistry under Nobel Laureate Harold Urey. After receiving a Ph.D. in geology-geochemistry from the University of Chicago in 1951, Craig stayed on as a research associate at the Enrico Fermi Institute for Nuclear Studies at the University of Chicago. During this time he and Urey discovered that meteorites fall into discrete groups based on their oxidation states and content of iron. He went on to study the distribution of deuterium and oxygen isotopes in natural waters, establishing the “Global Meteoric Water” relationship

of these isotopes which has become fundamental for studies in hydrology and climatology. He became a faculty member at Scripps in 1955.

In 1972, Craig and his wife Valerie showed that carbon and oxygen isotopes can be used to determine the provenance of marbles used in ancient Greek sculptures and temples, a study that is still continuing.

In recognition of his scientific achievements, Craig has received many honors. He was elected to membership in the National Academy of Sciences in 1979. He received the V.M. Goldschmidt Medal of the Geochemical Society in 1979, the National Science Foundation "Special Creativity" Award in Oceanography in 1982, the Arthur L. Day Medal of the Geological Society of America in 1983, and the honorary degree of Docteur (Honoris Causa) of the University de Paris (Pierre et Marie Curie) in 1983. In 1987, he was awarded the Arthur L. Day Prize of the National Academy of Sciences and was co-recipient of the Vetlesen Prize from Columbia University. In 1991, he was awarded an honorary doctorate degree from the University of Chicago, and in 1993 he was named an honorary fellow of the European Union of Geosciences.

*from a University of California press release*

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*James A. Harrell*

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