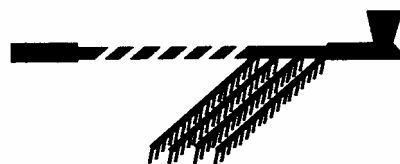


CALUMET

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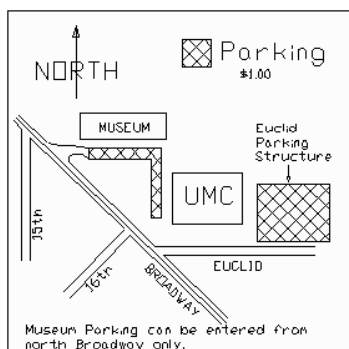
PRESERVATION
EXPLORATION



Newsletter of the Indian Peaks Chapter of the Colorado Archaeological Society
January, 2004

CALENDAR OF EVENTS

**General (lecture) meetings are held in the University of Colorado Museum, Dinosaur Room
Second Thursday of each Month, at 7:00 PM. The public is always welcome.**



The Museum parking lot 208 is **NOW AVAILABLE** to non-permit holders, even at night. Cost is \$2.00 per vehicle. Bring \$1 bills or quarters.

You can also park in the Euclid parking structure for \$2.00. The Euclid parking lot is east of the Museum on Euclid. After parking in the Euclid Parking Structure, walk west on Euclid toward Broadway. Prior to Broadway, take the sidewalk to the right to the Museum parking lot. It is only a few hundred yards.

2004 Event Calendar

2004 Presentations

- January 8** Robert Hohlfelder. Topic: Rome's Maritime Architectural Revolution. See Page 2.
- February 12** Doug Bamforth. Topic: Not determined.
- March 11** Tracy Sweely. Topic: The Invisible Maya: Locating Non-platform Dwellings Using Electromagnetic Induction.
- April 8** Calvin H. Jennings. Topic: Applied Archaeology: Crime Scene Investigation and Reconstruction.
- May 13** Mark D. Mitchell. Topic: To be determined.
- September 9** Linda Cummings. Topic: Prehistoric diets in the old and new worlds.
- October 14** Open
- November 11** Cherie Walth. Topic: How to recognize human bone (distinguish from non-human bones).
- December 9** Holiday Party, Location to be determined.

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ROME'S MARITIME ARCHITECTURAL REVOLUTION

Robert L. Hohlfelder

Professor of History, University of Colorado, Boulder

The development of Roman hydraulic concrete enabled builders to place harbors wherever political, military or economic considerations dictated and not simply where advantageous natural features existed. This capability enabled the architectural revolution that transformed the face of Rome and other urban centers in the early empire to move into the sea.

Using this durable, plastic material, master builders experimented with harbor construction techniques and design programs throughout the Mediterranean. Ultimately they achieved a technological pinnacle not rivaled until recent times.

The Roman Maritime Concrete Study (ROMACONS), which I co-direct, is an international research project formed to examine the nature of harbor construction throughout the geographical and chronological limits of the Roman Empire. This paper will summarize recent maritime archaeological research relating to Roman harbor engineering and discuss specifically fieldwork conducted in 2002 and 2003 at various sites in Italy.

Change in Executive Board Meetings

Beginning in January, the Executive Board meetings will be held following the presentation meetings. All members are invited to attend. The meetings will be short. Please consider staying over a few minutes to listen/participate in the meeting.

2004 Officers and Board Members

Co-Presidents	Cheryl Damon Kris Holien
Secretary	Piper Prillaman
Treasurer	Rick Pitre
Professional Advisor	Pete Gleichman
Internet Manager	Piper Prillaman
Calumet Editor	Tom Cree
PAAC Coordinator	Jim Morrell
CAS Representative	open
Archivist	Maureen Arthur
Board Members	Michael Braitberg, Jeff Ferguson, Steve Holen, Cindy Miller, Jo Morgan, Russell Smith

Archaeology Turns to Superconductivity

Researchers from Israel have developed a new way to date archaeological objects that is based on superconductivity. The new technique relies on measuring the magnetic signal from lead - which was widely used in antiquity - in samples that have been cooled to cryogenic temperatures. The method could be used to date pipes, coins, bottles and other objects.

Lead is stable in many environments and corrodes only very slowly into lead oxide and lead carbonate. It becomes a superconductor when cooled below 7.2 Kelvin, whereas the corrosion products do not. This means that the magnetization of the lead will be several orders of magnitude higher than that of the corrosion products when the sample is placed in an applied magnetic field at temperatures below 7.2 Kelvin. It is therefore reasonable to assume that the magnetic signal from the sample is coming from the lead only.

Shimon Reich from the Weizmann Institute of Science and two colleagues - Grigori Leituss, a metallurgist, and Sarel Shalev, an archaeologist at the Weizmann Institute and also the University of Haifa - started by measuring the magnetization of small discs of material from different samples. This allowed them to calculate the amount of metallic lead that was present by mass. Next they weighed the samples, which gave them the total mass - the lead plus corrosion products. The difference between these two masses is therefore the mass of the corrosion products alone.

Reich and colleagues then plotted the mass of corrosion product per unit area against 'archaeological age' for various well-dated lead samples from the Tel-Dor site in Israel, as well as contemporary data. The Tel-Dor samples include artifacts from the Persian era some 2500 years ago to the Crusader period about 750 years ago. They found that the mass of corrosion product in a sample was directly proportional to its age. Therefore, if the mass of corrosion product in a sample can be measured, then its age can be determined from the graph. "Until now, no archaeological method existed that could directly date lead," said Reich.

The researchers say that their technique is, in principle, non-destructive because the corrosion products need not be mechanically or chemically separated from the lead metal. Moreover, since corrosion increases with time, the relative dating accuracy should improve with the age of the relics being studied.

Book Review

Traces of the Past - Unraveling the Secrets of Archaeology through Chemistry

Joseph B. Lambert

Published in 1997, this book details how chemistry is used to date almost all the materials that archaeologists find during excavation. The chemical processes are described and the analysis implications are provided. Ever wondered where some things came from? Ever wonder where we came from?

The major topics covered are: stone, soil, pottery, color, glass, organics, metals, and humans (including DNA). How the materials were made, what they were made of, how different locations had materials of slightly different composition, and how the raw materials were obtained and from where are covered. The migration of the technology is shown, either by trade or by cultural transfer.

It is a very interesting book, worthy of the time to read it. The language is easy and explanations are clear.

2003 IPCAS Officers, Board Members, and major functions

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Board Member	Jo Morgan		
Board Member	Russell Smith	(303) 776-5503	rdsmith@lanminds.net

Please check the chapter web-site at: <http://www.indianpeaksarchaeology.org>

MEMBERSHIP APPLICATION - INDIAN PEAKS CHAPTER

____ **Individual** \$28.50 / Year ____ **New** _____ **Date**
____ **Family** \$33 / Year ____ **Renewal**
____ **Student** \$14.25 / Year, with Calumet delivery by e-mail

NAME _____ **TELEPHONE** (____) _____

ADDRESS _____ **E-MAIL** _____

CITY _____ **STATE** _____ **ZIP** _____

Please make check payable to: Indian Peaks Chapter, CAS
Mail to: PO Box 18301
Boulder, 80308-1301

When you join or renew you will receive the *Calumet*, our monthly newsletter, and
Southwestern Lore, the quarterly publication of the Colorado Archaeological Society.

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