International Association for Obsidian Studies Newsletter

Number 6 **Spring 1992**

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Assembled and edited by K. Tremaine and R. Jackson

CONTENTS

NEWS AND INFORMATION

IAOS OBSIDIAN BIBLIOGRAPHY VERSION 1.1

The latest version of the IAOS on-disk obsidian bibliography has been completed and is ready for distribution. There are now more than 2,100 obsidian and natural glass-related references listed in the bibliography file. For you IBM PC users, I have rewritten the user-friendly shell from which you can use the bibliography and have made a few other detail changes. The next version of the bibliography will emerge from the computers of Kim Tremaine and myself in another year or so. By and by, we'll have an IBM PC database version of the bibliography available for IAOS members - references, keywords, and eventually, short abstracts. This should transform what is now essentially a long list that is searchable for text strings into a full-fledged research literature database. I'm having a little trouble deciding on which database to use - if anyone has any suggestions or preferences, please get in touch with me. dBASE file formats (.DBF) are the most universally supported but do not deal well with lengthy text fields (like abstracts). Whatever database we decide to use, we plan to distribute a shareware database manager with it so that users will not have to buy any expensive software. We'll announce our progress in a future newsletter.

Apple Macintosh owners, take note! I also have available a text file of the IAOS Bibliography that has been converted to MacWrite format. If you would like a copy, contact me directly and I'll forward you a copy. My thanks to Clement Meighan for taking care of the IBM to Mac conversion. As always, if you find any notable omissions in the bibliography, please let me know.

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UPCOMING IAOS ANNUAL MEETING

The International Association for Obsidian Studies will be holding its fourth annual meeting on Friday, April 24th at the Hilton Hotel, Pasadena, California, during the Society for California Archaeology Annual Meeting. The meeting will be held in Pacific Room A at twelve noon. Munchies and drink will be provided.

AGENDA

- New Officers
- Treasurer's Report
- Membership Status
- Newsletter Status
- Report of Activities
- Announcements
- Open Floor

UPCOMING INTERNATIONAL SYMPOSIUM ON ARCHAEOMETRY

Los Angeles, California, March 23 - 27, 1992

PAPERS TO BE PRESENTED:

M.D. Glascock

Recent Advances in the Investigation of New World Obsidian

W. Dreyer

Sourcing in the Presence of Uncertainty; The Use of First Order Predicate Logic and Certainty Factors in the Analysis of Geochemical Sources for Obsidian Artifacts.

R.D. Giauque, F. Asaro, F. Stross, & T. Hester

High Precision Non-Destructive X-ray Fluorescence Measurements of Obsidian Artifacts for Provenance Determination

G. Schneider

Analysis of Eastern Anatolian Obsidian Using X-Ray Fluorescence

M.J. Blackman

Obsidian Exchange Patterns in the Middle East: A Reevaluation

J.M. Elam, M.D. Glascock, and H. Neff

Source Identification and Hydration Dating of Obsidian Artifacts from the Valley of Oaxaca, Mexico

J. Peterson, D. Mitchell, and M.S. Shackley

Obsidian X-Ray Fluorescence Data from Pueblo Grande, AZ: Modelling Social and Economic Patterns of Lithic Procurement

POSTERS TO BE PRESENTED:

C.M. Stevenson, J.J. Mazer, E. Knaus, and J.K. Bates

Homogeneity of Water Content in Obsidians from the Coso Volcanic Field: Implications for Obsidian Hydration Dating

J.E. Ericson and M.D. Glascock

Chemical Characterization of Obsidian Flows and Domes of the Coso Volcanic Field, China Lake, California

T.L. Jackson and J. Hampel

Size Effects in the Energy-Dispersive X-Ray Fluorescence (EDXRF) Analysis of Archaeological Obsidian Artifacts

M.S. Shackley and J. Hampel

Surface Effects in the Energy-Dispersive X-Ray Fluorescence (EDXRF) Analysis of Archaeological Obsidian

COMMENTARY

OBSIDIAN AND "EXCHANGE SYSTEMS"

by Clement W. Meighan

In reviewing the extensive bibliographies on obsidian compiled by Janet Scalise, Kim Tremaine, and Craig Skinner, I am impressed at the tremendous amount of publication now available dealing with obsidian in various research contexts. One reason for this obviously is our recently-acquired ability to determine the source of obsidian and hence recognize the appearance of obsidian artifacts and chipping waste in sites which may be far from the source. There appears to me to be a problem in the way these data are used, however, and I believe that recognition of obsidian sources has sometimes been used to build bigger conclusions than the evidence justifies. This is not a critique of individual papers, but a general observation based on reviewing much of the literature in the bibliographies mentioned above.

Recognition of "alien" obsidian is not necessarily discovery of an "exchange system" nor even trade in all instances. Other evidence has to be brought forward before an "exchange system" can be postulated, and in most of the papers utilizing this somewhat jargonistic term, the "exchange system" is assumed rather than documented.

"Exchange" implies that something was being given for the obsidian found away from the source. However, there is rarely any archaeological evidence for what that something may have been. It is equally likely that people went to the obsidian source, collected obsidian, and took it home with them--no exchange was involved. It is not unlikely that semi-nomadic people collected and used obsidian from more than one source if it was within their territorial rounds. Particularly in regions where several obsidian sources are fairly close together, this is the most economical explanation for the occurrence of diverse obsidian in hunter-gatherer sites.

The use of the term "system" implies an economic sphere of some kind, with regular trade and exchange and some general rules of economic procedure (trading partners, medium of exchange, etc.). The "system" is even less documented in the hunter-gatherer archaeological reports than the "exchange". In many cases, the quantity of obsidian recovered in archaeological contexts is too small to support the idea of a "system", and it is extremely speculative to make such an assumption. There are, of course, some exceptions, such as the green obsidian from central Mexico, which occurs in such large amounts over such a wide area that we can assume a factory-like production and a true exchange system; this is supported by ethnohistoric evidence as well. However, in such an example we are looking at the economics of a civilization, not at small mobile populations of hunters and gatherers.

Even for established agricultural societies (such as Hopewell and Hohokam), where it is quite clear that extensive exchange networks existed, particularly for the importation of exotic materials, it is not easy to document a real exchange system so far as obsidian is concerned. In the case of Hopewell, it has been argued that all the known Hopewell obsidian could come from one or two expeditions; this is not an exchange system but a sporadic contact. In the case of Hohokam, what obsidian we know about came from northern Arizona, but there is not enough of it in Hohokam sites to support any systematic obsidian trade.

In California, one of the few indications of a trade system involving obsidian is that of obsidian from the Coso source(s), which found its way to coastal southern California and the offshore islands over a long period of time (most prominently between about A.D. 0 and 800). The quantity of obsidian is large enough to be present in hundreds of sites, and the geographic route of travel for traders is well known. Caches of obsidian blanks have been found in areas between the quarries and the coast, showing transport of a least 10-20 pounds of obsidian at a time, carried in the form of large blanks intended for reworking. The quantity in some of these caches seems larger than would be collected by an individual making projectile points for his own use, and the conclusion that these represent export items seems justified. We cannot rule out, however, the possibility that individuals from the coast went to the obsidian quarries and carried back whatever obsidian they could. There may well have been a trade system, but intra-tribal rather than inter-tribal. Since there is a continuity of Shoshonean speakers between Coso and the Los Angeles area, it is not necessary to propose "foreign trade" to explain the appearance of Coso obsidian in coastal sites in the Los Angeles basin.

However, in this case we do have some indication of what was trading the other way, principally shell beads and marine shells, extensively documented in numerous publications and the forthcoming PhD dissertation of Janet Scalise.

The fact that some sort of exchange system can be documented for Coso obsidian does not mean that the same applies to all the other western locations where "foreign" obsidian is found. Before postulating an exchange system, we need to ask the following questions:

1. Did obsidian change hands (or did individuals just go and get it)?

2. Is the quantity of obsidian sufficiently large to argue for trade as opposed to sporadic visits?

3. Is the duration of the trade long enough to support the conclusion that systematic contact was maintained with suppliers of obsidian? Can the observed obsidian be explained as a one-shot deal, or does it span generations and centuries?

The situation is complicated because obsidian could be either a commodity (basic material for manufacture of stone tools) or in some cases an exotic rare substance which had a symbolic value in religion, wealth emphasis, or ritual activity. Very different kinds of social contact are involved--in the first instance there is a commerce with established buyers and sellers (with perhaps middlemen along the way). In the second case, there may be a complex web of relationships in which the ultimate owner of prized obsidian items had no connection with, or knowledge of, the obsidian source. The obsidian item may be ascribed to a mythical or even divine source. It may have a carefully preserved history as an heirloom used for generations, as in Northwestern California among such groups as the Yurok. Obviously the obsidian had to come from a particular source and find its way to the ultimate owner, but this is not "commerce" in the same way that a sack of obsidian blanks used for manufacture of arrowheads may be traded.

These cautions reinforce the need for more detailed evidence, and justify the extensive research now being conducted with obsidian sources and putative trade relationships. Archaeologists are generally forced to use meager facts to support broad conclusions, but in the case of obsidian studies we have one of the best topics for "proving" our points about contact and trade, and we should hold off on large regional conclusions until we have the facts firmly in hand.

SHORT REPORTS

Compiled by Michael F. Rondeau of CALTRANS, Office of Environmental Analysis, 650 Howe Avenue, Suite 400, Sacramento, California 92825 USA; (916) 920-7458; FAX (916) 920-7149.

The number of archaeological projects involving specialized obsidian studies is constantly increasing. New reports are finalized, fresh studies are begun, and older findings remain obscured in the gray literature of CRM reporting. This short reports section seeks to provide a brief sampler of recent reports, research in progress, and reports on past studies that have been extent for sometime. For contributions to Short Reports involving current or past studies as well as those still in progress, contact Mike Rondeau.

OBSIDIAN SAMPLING CONSIDERATIONS AT CA-SON-120

Archaeological Data Recovery at CA-Son-120, Sonoma County, California by Terry Jones and John Hayes (1989), California Department of Transportation, San Francisco. Of interest in this report are the considerations for selecting an obsidian sample to undergo sourcing and hydration studies. The concern for a careful sampling strategy was influenced by the recognition that (as with any study) there would be a limited number submitted for analysis. The intent was to find ways to maximize the research potential of the data produced in terms of the number of research questions that could be addressed.

One decision was the rejection of cutting of specimens of two late period projectile point types since there timing is known. Another concern was how to select samples of different obsidian sources to avoid bias in the hydration results. This effort involved visually sourcing the obsidian which found that 70 percent of the specimens were Napa Valley. Thus 70 percent of the pieces submitted for hydration analysis were from this source. Borax Lake, Annadel, Trinity, and Mt. Konocti were also present. A strong increase in the frequency of use for Annadel glass relative to Napa Valley was noted for the late period. Occupation at CA-SON-120 may have begun as early as 6000 B.C. and ended around A.D. 1700. Chemical sourcing was conducted by Richard Hughes and hydration by Tom Origer.

NORTHERN MOST OCCURRENCE OF COSO OBSIDIAN IN CALIFORNIA?

Archeological Investigations at CA-PLU-115, Boathouse Point on Bucks Lake, Plumas County, California by Peak & Associates, Sacramento (1983). Bucks Lake at the northern end of the Sierra Nevada mountains is more than 300 air miles from the Coso obsidian source. Even so, a small, serrated projectile point was chemically sourced as Coso. Due to the great distance from the source area, it was recommended that this finding be viewed with caution. A wide range of other obsidian types were noted including Vaya, Grasshopper Flat, Medicine Lake, Borax Lake, Bodie Hills, Mono, Glass Mountain, Tuscan, and Warner. It was suggested, based on the hydration band widths that Vaya obsidian tended to hydrate faster than either Borax Lake or Tuscan obsidian. Site occupation was placed from around 4000 B.P. to the historic period. The sourcing analysis was conducted by Paul Bouey and the hydration by Rob Jackson.

OLD HYDRATION FROM CA-LAK-754

Matocq Archaeological Project, An Archaeological Investigation on the Borax Lake Obsidian Flow, Clearlake, Lake County, California by John W. Dougherty and Suzanne B. Stewart, Archaeological Services, Inc., Kelseyville (1991). This report covers the archaeological study of a highly disturbed locality in the Clearlake Park area on the shore of Clear Lake. The work was based on an established archaeological programmatic treatment plan for the Borax Lake obsidian flow locality. Five bifaces, two unifaces and 16 debitage specimens were submitted for study. Four of the formed artifacts provided band widths ranging from 8.6 through 11.6 microns. The debitage had a range from 4.9 through 10.7 microns. More than half of all specimens range between 9.1 and 11.6 microns. One specimen exhibited three different band widths averaging 7.3, 9.1, and 15.1. The latter is thought to represent a non-cultural break. All specimens were assigned to the Borax Lake source. Hydration analysis and visual sourcing were conducted by Tom Origer.

STUDY IN PROGRESS: LATE PREHISTORIC USE OF ELKO POINTS?

Fragmentary point specimens meeting both traditional (morphological) and metric (Thomas 1981) criteria as Elko notched points were recovered from CA-ALP-152 in Alpine County,California. This assignment includes 14 relatively whole specimens and nine expanding base fragments. The hydration bands ranged from 1.0 to 3.8 microns. Recutting of four specimens in an attempt to find thicker bands to support technological evidence of extensive point rejuvenation appears to have had some success in three cases with mean band differences of 1.0/1.7, 1.3/1.6, and 1.3/1.7 microns. Other point types recovered from CA-Alp-152 include Desert Side-notched, Cottonwood Triangular, Elko Eared, a Stemmed Leaf, and a Concave Base specimen. Two periods of occupation are suggested with one between 3300-1250 B.P. and the other during the Late Prehistoric (Peak and Neuenschwander 1991). Only Bodie Hills obsidian was identified. Details of this study are to be presented by Mike Rondeau in the Central Sierra symposium chaired by Lisa Hanson during the Annual Society for California Archaeology Meetings in Pasadena, April 1992. Use of Elko Corner-notched points as a time marker in this region will be evaluated. Visual sourcing was conducted by Mike Rondeau and chemical source characterization by Richard Hughes. Rob Jackson performed the hydration analysis.

STUDY IN PROGRESS: ALEXANDER VALLEY, CA-SON-1810 AND CA-SON-1811

The Cultural Resources Facility, Department of Anthropology, Sonoma State University is currently working on collections from Alexander Valley, Sonoma County, California in conjunction with Glenn Gmoser, San Francisco District, Caltrans. The two sites exhibit significantly different lithic profiles. CA-SON-1810 has a majority of its debitage and flaked stone tools of chert with only about 40 percent of obsidian. This site has mainly Napa Valley glass, more Mt. Konocti obsidian than the other site and possibly Franz Valley. Approximately ninety percent of the flaked stone from CA-SON-1811 is obsidian. Napa Valley is again the dominant glass with a significant showing of Franz Valley obsidian.

Studies thus far suggest that the mean hydration band width is approximately 4.1 microns at CA-SON-1810 and 3.3 microns at CA-SON-1811. CA-SON-1811 appears to represent the most intensive prehistoric use of Franz Valley obsidian thus far recognized (Sunshine Psota: personal communication 1992). Current work is attempting to determine if local procurement of Napa Valley glass pebbles also occurred in that locality. Various sampling strategies for additional hydration studies are being considered. Richard Hughes has accomplished the sourcing analysis. Visual sourcing has been undertaken by Tom Origer and Sunshine Psota. Origer is also conducting the hydration analysis.

References

Peak, A. S. and N. J. Neuenschwander

1991 Archeological Data Recovery of CA-Alp-109, CA-Alp-149, CA-Alp-152, CA-Alp-192, CA-Alp-252, CA-Tuo-675, 1289, CA-Tuo-1607, Upper Mountain Locale, Alpine and Tuolumne Counties, California. Cultural Resource Studies, North Fork Stanislaus River Hydroelectric Development Project Vol. 5. Northern California Power Agency, Roseville, California.

Thomas, D. H.

1981 How to Classify the Projectile Points from Monitor Valley, Nevada. Journal of California and Great Basin Anthropology 3(1):7-43.

ABSTRACTS AND ANNOTATIONS ON REPORTS AND PUBLICATIONS

Compiled by Kim Tremaine of BioSystems Analysis, Inc., 1017 Front Street, Sacramento, California 95814 USA; (916) 557-4500; FAX (916) 557-4511.

The volume of so-called "gray literature" in archaeology is staggering, making it difficult for researchers who are not "plugged-in" to contract or research archaeology of a certain region to hear of and gain access to reports. In addition, the proliferation and number of journals, and the interdisciplinary nature of obsidian and glass studies make it difficult to keep abreast of all relevant, current literature. The IAOS Newsletter will alert readers to some of this information by reproducing abstracts and summarizing literature that may be of particular interest to IAOS members.

Hughes, R.E., and W.B. Lees

1991 Provenance Analysis of Obsidian from Two Late Prehistoric Archaeological Sites in Kansas. Transactions of the Kansas Academy of Science 94(1-2):38-45.

ABSTRACT

Six obsidian artifacts from two protohistoric archaeological sites in Kansas were subjected to non-destructive energy dispersive x-ray fluorescence analysis to determine the parent obsidian source used in their manufacture. Results indicate that all six specimens were derived from two obsidian sources located in the Jemez volcanic field of northern New Mexico.

Hughes, R.E.

1988 Notes on Obsidian from the Fort Hood Area of Central Texas. Bulletin of the Texas Archeological Society 59:193-199.

ABSTRACT

Nondestructive energy dispersive x-ray fluorescence analyses were performed on two obsidian artifacts from the Fort Hood area of Bell and Coryell counties in Central Texas. These studies showed that the obsidian came from two different sources in southwestern and north central New Mexico.

Lynch T.F., and C.M. Stevenson

1992 Obsidian Hydration Dating and Temperature Controls in the Punta Negra Region of Northern Chile. Quaternary Research 37:117-124.

ABSTRACT

Effective hydration temperature (EHT) is essential for the computation of obsidian hydration dates. In the Atacama Desert, the scarcity of air-temperature records combines with extremes of elevation and local temperature to encourage, or even require, the use of buried thermal cells to record on-site mean annual temperatures. Compositional analysis (sourcing) and hydration rate development in the laboratory are also necessary, especially where other dating methods are unavailable to confirm the hydration rate. Paleoindian or Early Archaic through modern obsidian dates support a human settlement pattern history derived from archaeological/geomorphological studies of climatological and hydrological change.

Shackley, M. Steven

1991 Tank Mountains Obsidian: A Newly Discovered Archaeological Obsidian Source in East-Central Yuma County, Arizona. *Kiva* 57(1):17-25.

ABSTRACT

A trace element analysis by energy dispersive x-ray fluorescence (EDXRF) is provided for a newly discovered archaeological obsidian source in east- central Yuma County, Arizona. This Tertiary glass source is unique geochemically, but exhibits many of the attributes typical of Tertiary glass sources in the Sonoran Desert. Thus far, Tank Mountains material has been found in Archaic through Classic period Hohokam contexts as far east as the Phoenix Valley, although it appears to have not been used competitively with the more extensive sources of Vulture and Sauceda Mountains.

Stark, B.L., L. Heller, M.D. Glascock, J.M. Elam, and H. Neff

1991 Obsidian Artifact Source Analysis for the Mixtequilla Region, South-Central Veracruz, Mexico. Paper presented at the Society for American Archaeology meetings in April 1991, New Orleans.

ABSTRACT

The results of instrumental neutron activation analysis (INAA) of 201 obsidian artifacts derived from a settlement pattern project (Proyecto Arqueologico La Mixtequilla [PALM] indicate that Zaragoza-Oyameles, Puebla, and Pico del Orizaba, Veracruz, were the most common sources for obsidian to this Gulf coast region. Zaragoza-Oyameles obsidian, possibly under the control of the site of Cantona, predominates in the Classic period prismatic blade assemblages, with Pico used extensively for Preclassic flake technology and for Postclassic prismatic cores. Discussion focuses on the Classic period and the extent of the Zaragoza-Oyameles network. Comparative data suggest that the economic hegemony of Teotihuacan may have been more restricted than often claimed or that obsidian distribution was of limited direct importance to state administration. In addition, INAA strongly supports the results of visual characterization for analysis for the larger PALM data base.

Braswell, G.E. and M.D. Glascock

1992 A New Obsidian Source in the Highlands of Guatemala. Ancient Mesoamerica 3(1).

ABSTRACT

A new obsidian source has recently been discovered in the highlands of Guatemala, near the city of Sansare, El Progreso. Ten samples have been subjected to neutron activation analysis, and the results are presented. While ceramic affinities tie the Sansare area with Formative and Classic period Highland Maya sites, linguistic evidence suggests that Postclassic inhabitants of this region were Xinca speakers.

Braswell, G.E.

1992 Obsidian Hydration Dating, the Coner Phase and Revisionist Chronology at Copan, Honduras. Accepted for Latin American Antiquity, October 1991.

ABSTRACT

Webster and Freter (1990b) have suggested that the terminal date for the Late Classic Coner phase at Copan, Honduras be extended to A.D. 1100 or 1200 on the basis of dates determined from obsidian blades found in Coner phase contexts. The technique of obsidian hydration dating contains great potentials for error, from both laboratory determinations of rate constants and measurements of effective hydration temperatures (EHTs) in the field. The rate constants used to determine these dates are of questionable validity and need to be independently verified. Significantly, no measurements of EHTs were taken at Copan. An error of but a few Kelvins in estimated EHT can lead to dates off by several centuries. In view of the likelihood of large errors in the Copan dates, the assertion that the Coner phase should be extended beyond A.D. 850 is premature.

Ridings, R.

1991 Obsidian Hydration Dating: The Effects of Mean Exponential Ground Temperature and Depth of Artifact Recovery. Journal of Field Archaeology 18:77-85.

ABSTRACT

The results of a study of obsidian hydration dating conducted in northern New Mexico demonstrate that for a high degree of temporal resolution, both precise depth provenience for artifacts and measurement of the mean exponential ground temperature at several depths in the site may be required. When dates for artifacts recovered from one site were calculated using thermal cell temperatures from a site that was 24 m higher in elevation and located only 1 km away, the differences was on the order of 250-300 years. The difference between dates calculated using an effective hydration temperature estimated from air temperature data and the known dates for the sites was as large as 100 years in some cases.

This study shows that the effect of using a precise depth of recovery in date calculations appears to decrease with depth and to be strongest in the first meter below the present ground surface. Effective hydration temperatures at one site varied by more than 3 degrees Centigrade in the first meter. A change of 1 degree Centigrade in the effective hydration temperature may have a significant effect on an obsidian hydration date.

Hatch, J.W., J.W.Michels, C.M. Stevenson, B.E. Scheetz, and R.A. Geidel

1990 Hopewell Obsidian Studies: Behavioral Implications of Recent Sourcing and Dating Research. American Antiquity 55(3):461-479.

ABSTRACT

Specific questions regarding the antiquity of major midwestern Hopewell culture sites and their role in regional exchange systems are addressed in this paper through the dating (obsidian hydration) and compositional characterization (neutron activation analysis [INAA] and atomic absorption spectroscopy [AAS]) of obsidian artifacts. The analysis of 34 specimens from the Seip, Mound City, and Hopewell sites, Ohio, and the Naples site, Illinois, increases fivefold the number of chronometric dates available from these sites and expands the sample of compositionally identified specimens beyond those resulting from Griffen et al.'s (1969) pioneering work. The resulting hydration dates support earlier estimates of the age of these contexts based on ^{14}C or artifact seriation alone. The range of dates (78 B.C.-A.D. 347) and the compositional variety within the sample favors an expanded view of the nature of obsidian trade in the Midwest to include additional western sources, a longer episode of importation, and possible changes in the sources used through time.

Green, R.C.

1991 A Reappraisal of the Dating for Some Lapita Sites in the Reef/Santa Cruz Group of the Southeast Solomons. Journal of the Polynesian Society 100(2):197-207.

ANNOTATION (no abstract)

In reappraising the dating for some lapita sites in the Reef/Santa Cruz Group of the Southeast Solomons, Green examines: (1) relative dating based on ceramic, obsidian, and chert assemblages; and (2) direct dating based on radiocarbon, thermoluminescence of pottery sherds, and obsidian hydration analyses. A mixed assessment was made of dates derived from hydration analysis. He reports that attempts to obtain age estimates using this method utilized hydration intrinsic rates of hydration (i.e., rates developed based on accelerated hydration experiments conducted by Ambrose 1976) have not been very successful. With the exception of dating at one site, Green found obsidian results yielded intrinsic ages that were younger-to-much-younger than the radiocarbon ages. He and Ambrose conclude that "the whole set of fairly unsatisfactory readings...is simply a result of surface weathering reducing the hydration thickness". They note that the effect seems common in most coastal sites.

Bieling, D.G.

1992 Perspectives on Behavior Gained from Lithic Analysis and Archaeological Investigations near Bridgeport Mono County, California. M.A. Thesis, Anthropology Department, Sonoma State University, California.

ANNOTATION

In summarizing the results of investigations by the Anthropological Studies Center at Sonoma State University of seven prehistoric sites near Bridgeport, Mono County, California, Bieling conducted a review of regionally-specific Bodie Hill obsidian use through time. Hydration values generated for the Bridgeport locality as a whole, evidence considerable variability in frequency during temporal periods represented. High frequencies overall appear to characterize the Newberry Period, while lower frequencies and smaller ranges mark Haiwee and Marana times. Relatively low frequencies characterized by possible "episodic" peaks may mark Little Lake times.

Occupational variability, a strategy of frequent residential mobility, and technological organization are factors Bieling posits to account for variability evidenced in Archaic Period archaeological assemblages. Social organization during this period, although variable, was marked by mobility strategies and toolstone technology designed to optimize energy extraction from the environment. A flexible technology characterized by toolkit elements such as bifaces and projectile points that were easily rejuvenated to extend use-life, is posited as an adaptive response to subsistence variables. This technology, coupled with frequent residential shifts to new environmental patches, is found consistent with proposals of optimal foraging theory.

Onken, J.

1991 The Effect of Microenvironmental Temperature Variation on the Hydration of Late Holocene Mono Craters Volcanic Ashes From East-Central California. M.S. Prepublication Manuscript, Department of Geosciences, University of Arizona.

ABSTRACT

High-temperature induced hydration experiments on volcanic glasses have suggested that relatively minor differences in ambient temperature can significantly affect the rate of hydration. Many researchers have questioned the practice of extrapolating the temperature-rate relationships of these experiments to lower natural temperatures, but no study has systematically explored the temperature-rate relationship in naturally hydrated glasses. In this study, the hydration rates of late Holocene Mono Craters volcanic ashes deposited in a wide range of microclimatic regimes were found to vary from 4 to 30 $m^2/1000$ years, depending on altitude and soil moisture conditions. A predictive model for effective hydration temperature (EHT) was developed using Ambrose diffusion cell data from 17 sites. Mono Craters glass was found to hydrate 4.5 to 5 times faster at natural temperatures than predicted by induced hydration experiments. Thus, it is not necessarily appropriate to extrapolate the results of high-temperature experiments to lower, natural temperatures. Hydration rates should be developed and applied only after taking site temperature and soil moisture conditions into account.

TECHNOTES

This section of the Newsletter is devoted to sharing new techniques, innovative ideas, sources of equipment and supplies, and discussing new technologies, and providing guidance on obsidian studies techniques. Obsidian analysts are invited to submit information relating to these topics.

IAOS Standardization Slide Set for Measuring Hydration

Due to a lack of standards and occasional differences in hydration measurements produced by various laboratories, it has been difficult to gain and maintain the confidence of the archaeological community. Ensuring comparability of measurement (quality control), as well as standardization of data collection and reporting, should help to demonstrate that obsidian hydration can be a powerful analytic method. A slide set was developed at the inception of the IAOS for the purpose of ensuring that practicing technicians are producing obsidian hydration measurement results that can be reasonably replicated by others. At present, a handful of technicians have participated in this comparative exercise. We encourage new readers to take part in this cooperative undertaking. To obtain this slide set, please contact Lisa Swillinger (916) 898-6256.

MEETINGS AND EVENTS

Compiled by Dr. M. Steven Shackley, of the Lowie Museum of Anthropology, 103 Kroeber Hall, University of California, Berkeley, CA 94720 USA; (510) 642-3681; FAX 643-8557. BITNET: SHACKLEY @ UCBCMSA. INTERNET: SHACKLEY @ cmsa.berkeley.edu

March 1992

Mar. 9-13. PITTCON '92 (43rd Pittsburgh Conference & Exposition on Analytical Chemistry and Applied Spectroscopy). New Orleans, LA, USA. W. Richard Howe, Exposition Chairman, Pittsburgh Conference, 300 Penn Center Blvd., Suite 332. Pittsburgh, PA 15235, USA.

Mar. 23-27. International Symposium on Archaeometry, Fowler Museum of Cultural History, University of California, Los Angeles. Correspondence: *Archaeometry 92*, Pieter Meyers, LACMA Conservation Center, 5905 Wilshire Boulevard, Los Angeles, CA 90026 USA, (213) 857-6161, FAX (213) 931-7347. Abstracts due November 1, 1991.

April 1992

Apr. 5-10. 203rd American Chemical Society National Meeting. San Francisco, CA, USA. ACS Meetings, 1155 16th St. N.W., Washington, DC 20036, USA.

Apr. 8-12. Society for American Archaeology 57th Annual Meeting, Pittsburgh, PA, USA. Program Committee Chair: Gary M. Feinman, Department of Anthropology, University of Wisconsin, Madison, WI 53706, USA.

Apr. 24-26. Society for California Archaeology Annual Meeting. Pasadena, CA, USA. Dr. Joanne M. Mack, Department of Sociology and Anthropology, 425 North College Ave., Pomona College, Claremont, CA 91711, USA (714) 621-8403.

Apr. 27-May 2. Materials Research Society Spring Meeting (Symposium P: Materials Issues in Art and Archaeology III), San Francisco, California, USA. Materials Research Society, 9800 KcKnight Road, Pittsburgh, PA 15237, USA (412) 367-3003.

May 1992

May 2. California Desert Studies Consortium. Occidental College, Los Angeles. Dr. Gerry Scherba, California Desert Studies Consortium, Department of Biology, California State University, Fullerton, CA 92634 USA. (714) 773-2428.

May 25-27. Geological Association of Canada/Mineralogical Association of Canada, Annual Meeting. Wolfville, Nova Scotia, Canada. Aubrey Geoscience Centre, Bedford Institute of Oceanography, Box 1006, Dartmouth, Nova Scotia, B2Y 4A2, Canada (902) 426-6759.

August 1992

Aug. 22-27. 206th American Chemical Society National Meeting. Chicago, Illinois, USA. ACS Meetings, 1155 16th St. NW, Washington, DC 20036, USA (202) 872-4396.

Aug. 24-Sept. 3. 29th International Geological Sciences Congress. Kyoto, Japan. Secretary General, IGC-92 Office, PO Box 65, Tsukuba, Ibaraki 305, Japan (81-298-54-3627); fax 81-298-54-3629; telex 3652511GSJJ).

Aug.31-Sept 4. XIII International Congress on X-ray Optics and Microanalysis. Manchester. Mr. P.B. Kenway, Manchester Materials Science Centre, University of Manchester/UMIST, Grosvenor Street, Manchester M1 7HS, United Kingdom (061-200-3581; fax 061-200-3585).

October 1992

Oct. 8-10. Great Basin Anthropological Conference. Boise, Idaho. L. Daniel Myers, 339 Fairhaven Road, Dunkirk, Maryland 20754 USA. (301) 257-3264.

Oct.26-29. Geological Society of America, Annual Meeting. Cincinnati, Ohio, USA. Geological Society of America, 3300 Penrose Place, Boulder, CO 80301, USA. (303) 447-2020.

December 1992

Dec. 2-6. American Anthropological Association Annual Meeting, San Francisco, California, USA. American Anthropological Association, 1703 New Hampshire Ave., NW., Washington DC 20009, USA (202-232-8800).

1993

Feb. 11-16. American Association for the Advancement of Science, Annual Meeting. Boston, MA, USA. AAAS, 1333 H St. NW, Washington, DC 20005, USA (202) 326-6400.

Oct. 25-28. Geological Society of America, Annual Meeting. Boston, MA, USA. Geological Society of America, 3300 Penrose Place, Boulder, CO 80301, USA. (303) 447-2020.

ABOUT THE IAOS

The IAOS was established to:

1) develop standards for analytic procedures and ensure inter-laboratory comparability;

2) develop standards for recording and reporting obsidian hydration and sourcing results;

3) provide technical support in the form of training and workshops for those wanting to develop their expertise in the field.

4) provide a central source of information regarding advances in obsidian studies and the analytic capabilities of various laboratories and institutions.

MEMBERSHIP

The IAOS needs membership to ensure the success of the organization. To be included as a member and receive all of the benefits thereof, you may apply for membership in one of the following categories:

- Regular Member $20.00/year
- Institutional Member $50.00/year
- Life-Time Member $200.00

Regular members are individuals or institutions who are interested in obsidian studies, and wish to support the goals of the IAOS. Regular members will receive any general mailings; announcements of meetings, conferences, and symposia; newsletters; and papers distributed by the IAOS during the year. Regular members are entitled to attend and vote in Annual Meetings.

Institutional members are those individuals, facilities, and institutions who are active in obsidian studies and wish to participate in inter-laboratory comparisons and standardization. If an institution joins, all members of that institution are listed as IAOS members, although they will receive only one mailing per institution. Institutional members will receive assistance from, or be able to collaborate with, other institutional members. Institutional members are automatically on the Executive Board, and as such have greater influence on the goals and activities of the IAOS.

*Membership fee may be reduced or waived in cases of financial hardship or difficulty in paying in foreign currency. Please complete the form and return to the Secretary with a short explanation regarding lack of payment.

**Because membership fees are very low, the IAOS asks that all payment be made in US dollars in international money orders or checks payable on a bank with a US branch. If you do not do so, much of your dues is spent in currency exchange.

If you wish to join us, mail a check or money order to the IAOS:

Lisa Swillinger, Secretary-Treasurer
Department of Anthropology
California State University at Chico
Chico, California 95929-0400
(916) 898-6256

CALL FOR ARTICLES AND INFORMATION

Submissions for articles, reviews, short reports, abstracts, or announcements for inclusion in the next newsletter should be received by May 15, 1992. We accept electronic media on IBM compatible 3.5" or 5.25" diskettes, in a variety of word processing formats including Wordperfect (4.2 or 5.0), Wordstar, and Microsoft Word or ASCII text formats. A hard copy should accompany diskettes. **Articles or Reviews:** Send to Lisa Swillinger (address above).

Short Reports: If you are interested in briefly reporting on research findings (e.g., one column in length), contact Mike Rondeau at CALTRANS, Office of Environmental Analysis, 650 Howe Avenue, Suite 400, Sacramento, California 92825; (916) 920-7458; FAX (916) 920-7149.

Abstracts & Annotations: **If you are interested in submitting an abstract or annotation, please contact Kim Tremaine at BioSystems Analysis, 1017 Front Street, Sacramento, California 95814; (916) 557-4500; FAX (916) 557-4511.**

Meeting and Events: If you have any information on upcoming conferences or other events, please keep Dr. Steven Shackley informed. He can be reached at the Lowie Museum of Anthropology, 103 Kroeber Hall, University of California, Berkeley, CA 94720 USA; (510) 642-3681; FAX 643-8557; BITNET: SHACKLEY @ UCBCMSA.

SECOND CALL FOR E-MAIL ADDRESSES

The IAOS would like to include your e-mail address when we get around to printing up a membership name, address, and phone list. If you are currently plugged into one of the e-mail systems (Internet, BITNET, CompuServe, MCI Mail, etc.), please send me your name and e-mail address and I'll make sure that they get included. Craig E. Skinner Internet:skinncr@jacobs.cs.orst.edu

IAOS OFFICERS, 1990-1991

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