

Society for American Archaeology, NOTEBOOK, Feb., 1940.

ENCLOSURE

The accompanying reprint outlining the "Basic Needs of American Archaeology" appears as an excellent outline for the organization of the work of anyone. Those who are blessed with the backing which makes possible the support of men and the acquiring of space which makes it possible to carry on the various aspects of the program practically simultaneously are of course extremely fortunate. I do not think it bumptious to suggest that an occasional check-over of the organization on the basis of an outline such as this often brings to light small but important aspects which may be changed for the better. Such improvements often increase the efficiency of the organization; improve its ability to meet broadening horizons, and generally increase the validity and interest of the work.

To the person who is working alone or with limited time, backing, or what-not, the temptation is to say, concerning such programs of organization, "This does not apply to my work for it is based on an assumption that much is needed in the way of resources". On second thought however it may be seen that such is not the case. No matter what the situation is the general aim of all Archaeologists is "to make the past live again" and this can be done regardless of the resources which are at hand. Probably the simplest organization of archaeological work is to be found in the single worker who is interested primarily in the occasional walks in search of artifacts to be found on the surface. The fun of picking up specimens can be enhanced by "organizing" the pleasure. A Sunday afternoon's finds can be catalogued on evenings during the week. Rainy Sundays can be spent recording the sites and finds upon maps. One's wife may be drafted and thus prevented from growling so much about the mess on the living room table. The winters, when the pickings are covered with snow, may be spent tracing the distribution of the types of things which have been found; reading about similar things that others have found. Before one realizes it such a program will produce a mass of data and a number of ideas which will form

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a basis for a report of considerable interest. Try writing it, probably a summary of it will be just right for the NOTEBOOK, or even better the whole thing may be printed in ANTIQUITY.

If you wish to excavate some site you can go ahead in practically the same way. One or several people do not need all the resources which are enumerated in outlines such as this one. All you need is the program which can be developed out of such outlines. The details can be worked out according to available resources and you will be surprized at the simplicity of some definite program. Spend the season in the field, mapping simply but thoroughly a site; digging cautiously, perhaps slowly, but according to some plan; noting all the things which you see and think; and making a field catalogue of the specimens which you find. When the dig freezes up gather your gang together and work in your "laboratory". The dining room table is satisfactory -- a bench in the cellar is better from the distaff point of view. Here the maps and diagrams can be worked over, the specimens washed, repaired and the implications of the excavation hashed over. Before you know it you have the report of your site all done and submitted somewhere for publication. Above all things don't let the extensive preparations of a large organization scare you out of what you want to do. In reality the whole thing is simple and only appears complicated because an institution has available the resources which permit addition of separate units to take care of the different parts of the program.

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A letter from Adan E. Treganza, 2639 College Avenue, Berkeley, California brings up a point over which many tears and gallons of blood have been spilt. Unfortunately the space available does not permit the inclusion of the whole letter and so your Editor has presumed to offer a comment. If I am out of order I expect to be thoroughly and completely squashed. The point hinges upon the question of personal reactions to the criticism of one's work.

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The products of any sort of archaeological research should be offered as the result of logical argument. By the same token criticisms of the results of some argument should be offered as further logical discussion of the problem at hand. In this way the development of conclusions from any type of archaeological work partake of a mathematical character and in no sense is there or should there be reflections upon one's personal character or ability. Mistakes are, unfortunately, characteristic of humans, even geniuses make them; but fortunately the correction of a mistake clarifies a situation and aids in the progress which we are making. Omissions of fact from arguments are unfortunate but if we are interested in the truth of matters the reasons for such omissions are not important. If it is possible to supply information concerning certain points which are being discussed we should be concerned only with the fact supplied not with any implications of personality on the part of the author either of the original argument or the one who adds the information. If the addition of facts nullifies the original argument there should be no implications concerning the personality of the author. Such implications belong in another field completely divorced from the search for the truths of Anthropological thinking.

Throughout the history of Anthropology there are many instances of vitriolic arguments where the original point became obscured because the several individuals uncorked bottles of acid. Thank heaven this sort of discussion, if it really is discussion, has almost disappeared. After all, Anthropologists with their assumption of a knowledge of heredity, should know that we are all in the same boat as far as the physical characteristics of our ancestors are concerned. It is certain that the identification of physical or personal characteristics from one's attempts at logical argument are from the point of view of research most illogical and therefore extremely inappropriate.

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English vs. Metric Systems of Measurement

Several letters commenting on the use of the English and Metric systems of measurements have been received. Since space does not permit inclusion of all these letters I am taking the liberty of presenting two ideas.

Mr. Arthur Basto, South Woodstock, Connecticut writes that he believes that some system should be agreed upon as a standard for use, particularly in the Field. He says that when he commenced excavating there were so many problems to do with differences in soil conditions and with the location of artifacts that the use of a new system, the metric, only added another complication to the already confusing situation. To eliminate this he used the English system with which he was familiar. As he progressed with his excavation people visited him with a desire to learn his technique and he found likewise that they were or would have been confused if a strange system of measurement had been used. On the other hand, he finds that the use of the metric system is becoming more frequent and now he is confronted with the question of whether or not to change to the metric system. Mr. Basto believes that some discussion of the institution of a standard system of measurement in the pages of the NOTEBOOK would be welcome.

Mr. Fred Dustin, Saginaw, Michigan writes an interesting comment upon the use of the metric system which is valuable advice for everyone. He points out that the English system is widely used in this country by all but a very few and that it is more easily understood by far the greatest majority of people. Even as Latin terms are the language of science so the metric system is becoming the standard for measurement. However, if the scientists desire to have their work understood by all, the metric measurements used should be translated into feet and inches so that everybody may use them conveniently.

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Quotations from a letter by P. Schuyler Miller, Van Epps-Hartley Chapter, New York State Archaeological Association, Schenectady, New York.

"Papers presented at meetings of learned societies should be made available in some way. I agree with you that the Notebook has more important uses - the way was shown earlier - but I still want to see those papers. Having just spent Christmas week as chairman of a committee on publicity and records for an educational conference I know how hard it is to get such things together, but one solution would be to have file copies of all papers presented held in one place, in the same way that theses are held by a university. An exception to the common university practice (though I may be maligning the collegians) might be to have copies of papers made available to those who want them, for the cost of making and mailing the copy. Prints of illustrations could be supplied on the same basis.

If publication of these papers is attempted, I should say that it should be done in some such form as the Bulletin of the Archaeological Society of Connecticut, for those papers which do not find publication elsewhere, or which are not merely preliminary reports of papers to be written and published later. It is criminal that some of the papers read at meetings of the S.A.A. and similar groups cannot be used by those who were not at the meeting. If the speaker knows in advance that a copy of his paper is to be filed with the chairman of the section at which he speaks, there is no good reason why he should not be able to turn it in.

Publication of a mimeographed proceedings on the plan of the Connecticut Bulletin would, I am afraid, be too expensive and arduous a job at present, unless some volunteer would take over the work after the papers had been collected - not a reliable or satisfactory way out. I do hold that steps should be taken to get the papers, plus pertinent illustrations in the form of 8 x 10 prints of all slides used, in a place where they can be consulted. The Notebook might then use a few pages to list and abstract the papers read at the meeting, but only in skeleton, as in Chemical Abstracts. This would serve as an

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index to the meeting, and those who wanted to consult specific papers could ask to have copies made. Whether these papers should be filed in individual folders - a very bulky affair in the long run, though possibly easier to use - or bound inexpensively, with plates, in a "Proceedings" for the meeting, is something to be decided later. It should be almost as easy for a stenographer to copy the text of a bound-in paper as a loose one, and there is less chance that the sheets would be lost.

Such a depository for papers would provide a record available to those interested in learning what went on at the meeting, would not waste valuable space on trivial or sectional material which could be used for matters of general interest, and should not be too hard to make workable if a policy is definitely laid down and announced, and speakers made aware of what is expected of them before the meeting takes place. The question of plates seems most difficult to settle, for 8 x 10 prints are expensive even at cost, but if a duplicate negative could be on file, or if the speaker would agree to furnish additional prints from his own negatives at cost, it might be done. A new negative can always be made from a glossy print if necessary.

To return to the general policy of the Notebook, it seems to me that it has followed a very useful and satisfactory course thus far. It can be a medium of controversy or exposition where American Antiquity can not. It brings into the open disputes which might be cleared up if more minds were brought to bear upon it. It could, for example, be a medium for discussion of unsettled or doubtful points in Ritchie's definition of the Laurentian aspect, or of similar very general classifications. I should like to see it a medium for presentation of opinions and arguments on the subject of chronology throughout the continent - relative and precise - stemming, perhaps from the papers at the Chicago meeting (ed. note, Dec., 1939). Wherever ambiguity or uncertainty seems to exist, the Notebook can serve to bring it out in a way which a journal reserved for (presumably) final judgments and mature reflections cannot do.

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Another possibility which you might consider is some kind of general report from the ceramic repository at Ann Arbor and the lithic laboratory in Ohio, describing what is being done, and explaining what is needed from the field worker in the way of specimens, etc.

There is no danger that a publication of this kind will run out of material, if only you can prevail upon busy men to take time out to write what you need. There has not been anything like the Notebook before, and I imagine that the average professional worker, at least, does not feel free to unburden himself before every last bit of evidence is in and he is sure of himself. That may be why reports of techniques have predominated up to now, but I hope the time will come when its pages show the same kind of discussion which comes out in free-for-all arguments in hotel rooms and around restaurant tables at conventions. As a news-letter, that is how it can be most useful.

I always have a feeling that we may be going off half-cocked in making suggestions of this sort, but if, as amateurs, we do not have the time to add much in the way of direct research, we can at least do armchair thinking of a sort and say what we think. If we are out of order it is always easy to crack down on us without arousing any professional animosity, and if we are right about some things, so much the better. A group of us here try to act as a sort of damper upon a scientist friend of ours; at the same time we learn from him, and it may be that the technique is not a bad one. What seems perfectly obvious to the man making a study is often anything but obvious to the outsider.

Those of who are members of the S.A.A. are looking forward to future pages of the Notebook and hoping that we may be able to contribute something of some value to its pages, sooner or later."

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A Practical Method for Mending Bone

George E. Burns
Tucson, Arizona

The mending and repairing of human and animal bones in museums and laboratories has resulted in the development of several methods and the use of many different adhesives. Solutions of Alvar 7/70 (Shawinigan Products Corporation) and Ambroid have been used to advantage. Both are excellent adhering agencies but one difficulty is encountered namely, the length of time required for the mended bones to set. This necessitates sand boxes, balancing, complicated arrangements to hold the bones while the adhesive agency hardens.

Experiments have shown that if 2 successive sealing coats of 10% Alvar and Acetone are applied to the surfaces to be mended and allowed to dry that a final adhesive coat will set very rapidly. The experiments have further shown the final adhesive agency giving the fastest set and the most durable joint to be a solution of Ambroid and Alvar. The adhesive agency was prepared by slightly thinning a base of Ambroid with a 10% solution of Alvar and Acetone. The amount of thinning depends on the individual worker, the porosity of the bones being mended and to some extent the climate.

Whether or not the addition of the resin in the Alvar to the cellulose base of the Ambroid results in a stronger adhesive agency is unknown but from the experiments performed this seems to be the case.

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Some Ideas Regarding the Restoration of Pottery

Douglas S. Byers
Dept. of Archaeology, Andover, Mass.

It is swell to see the various ideas about restoring American pottery, but it always seems to me that restorations based on cores or molds that are thrown on a potter's wheel are too prone to

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that perfect symmetry of outline that was not truly characteristic of any Indian pottery, because the potter's wheel was something that the Indians didn't have. Not that the slight irregularity detracts from the charm and beauty of the pottery, but that the perfect regularity of the restoration isn't quite in character. This is glaringly so of our "Woodland" pottery, at least, of that which I have seen around here.

The method we have often followed with success was, certainly, not applicable to the restoration of whole pots from small sectors or rim or side wall, but it works for sherds large enough to give you an idea of the general size and shape of the vessel. We have pressed plastecine into the back of the sherds until it makes a perfect contact, then lifted it carefully and moved it to one side until a strip touches enough of the back of the sherd to give a firm grip. This was then used as a mold on which the plaster may be poured. Sometimes small clamps or clip clothes pins may be used to hold plastecine to the sherds. The plastecine has to be thick enough to keep its shape, but if it is handled carefully it can be used with great success. By reversing the position of the plastecine, that is, by putting it on the outside instead of the inside, on rims, collars, or other decorated areas, these can be reproduced in the plaster with considerable success.

The result will be the pleasingly irregular outline, often lop-sided or bulged in the wrong place, that is so characteristic of many of the Indian vessels.

Trouble is bound to occur on occasion, where there is nothing to hold a large floating sherd, for instance. In cases like this we use lead strips, which are soft and can be easily shaped to fit the curves, to support the floaters. With a little care and the judicious use of strips of lead or even heavy plastecine, the method isn't too hard. We have restored some pretty large vessels this way; one was twenty one inches high and eighteen in diameter.

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Incidentally, Mr. Adam's suggestion that soap or oil be rubbed on a sherd to keep plaster from sticking may lead to trouble in the case of very light-colored pottery. The oil will stain the surface of the sherd, and even the best of cleaners won't remove it entirely. A little wet modelling clay, put on with a brush, in the same way the opaque is put on a slide or negative, will fill up the pores of the surface and allow plaster spilled on the face to lift off easily. Any clay left in the pores will come out easily with a toothbrush held in one place and given a slight circular motion. The toothbrush, by the way, is a swell thing to "upset" the hard finish of the surface of the cast areas and give it a nice matte texture.

THE UNIVERSITY OF CHICAGO

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 The Department of the History of Art and Architecture is a leading center for the study of art and architecture in the United States. It is home to a distinguished faculty of scholars and artists, and a vibrant community of students. The department's research and teaching focus on the history of art and architecture in the West, and on the relationship between art and society. The department's programs include the M.A. in the History of Art and Architecture, the M.F.A. in the History of Art and Architecture, and the Ph.D. in the History of Art and Architecture. The department's facilities include a large collection of books and manuscripts, a gallery of art and architecture, and a state-of-the-art digital library.

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SOCIETY FOR AMERICAN ARCHAEOLOGY
ANNUAL MEETING

The Annual Meeting of the Society for American Archaeology will be held in connection with the Annual Meetings of the Central Section of the American Anthropological Association on April 25, 26 and 27 in Indianapolis, Indiana. The headquarters for the meetings are in the Hotel Marott at North Meridian Street and Boulevard. Arrangements have been made with this hotel for rooms in which to hold the sessions, and for accommodations for those attending the meetings.

A preliminary announcement of the sessions appears on the next page. It should be noted that the meetings on Thursday, April 25, are those of the Society alone, the meetings on Friday the 26th are held jointly with the Central Section. The meetings on Saturday morning are those of the Central Section alone. The program committees have worked out an interesting and stimulating schedule of events.

The Marott Hotel is on U.S. Highway 31 and State Highway 13. It is 26 blocks north of Monument Circle, the heart of the downtown district, and ten minutes by taxi from railroad, interurban, and bus stations.

Arrangements have been made to accommodate members in the hotel suites in groups of three, four, or five, at the student rate of \$2.00 a night per person. Regular transient rooms are rated at \$3.00, \$3.50, \$4.00, and \$4.50 single; \$5.00 and \$6.00 double with double bed; and \$6.00 and \$7.00 double with twin beds. It is suggested that those who desire accommodations at the Hotel Marott write for reservations directly to the hotel.

Final printed programs will be available at the hotel to those attending the meetings.

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SOCIETY FOR AMERICAN ARCHAEOLOGY
Annual Meeting - Indianapolis, Indiana
Hotel Marott

Program

April 25 - Thursday

9:30 A.M. - Papers

Ripley P. Bullen, Worcester, Mass.
"Preliminary report of the Dolly
Bond Steatite Quarry, Millbury,
Massachusetts."

Charles H. Fairbanks, Ocmulgee
National Monument.

"The Macon Earthlodge."

Lynn E. Howard, University of Oklahoma.

"Preliminary Report on Cherokee
County Archaeology."

David A. Baerreis, University of
Oklahoma.

"The Neosho Focus."

Brewton Berry, University of Missouri.

"The Location of the Missouri
Village Site."

Charles R. Keyes

"An Outline of Southwestern Iowa
Archaeology."

Gertrude S. Evans, New York Medical
College.

"A Minnesota Blade associated with
Human and other animal remains."

2:00 P.M. - Symposium on Terminology, Glenn
Black, Chairman

4:30 P.M. - Business meeting, Society for
American Archaeology

8:00 P.M. - Informal smoker

April 26 - Friday (Sessions held jointly with the
Central Section)

9:30 A.M. - Symposium on Culture History
(Prepared by Central Section)

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April 26 - Friday (cont.)

- 2:00 P.M. - Symposium on Culture Contact
(Prepared by Central Section)
- 6:30 P.M. - Joint annual banquet
- 8:30 P.M. - Evening lecture (to be supplied
by Central Section)

April 27 - Saturday (Only sessions of the Central
Section)

- A.M. - Symposium on Personality and
Society (first half)
Symposium on Comparative Sociology
of Primitive Groups (second half)
- 12:00 Noon- Business meeting - Central Section, A.A.A.

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ABSTRACTS OF PAPERS

THE DOLLY BOND STEATITE QUARRY Ripley P. Bullen

During the summer of 1939 an investigation was made of a recently discovered steatite quarry in Millbury, Massachusetts. A trench about thirty feet long and three feet wide and as much as seven feet deep was dug across the quarry at its minor axis. Half the work was done by trowelling by the writer and the rest with the assistance of three Clark University students working under National Youth Administration funds.

The trench showed a stratification of four layers but it is felt they are the results of weathering. Worked steatite and quarry tools were found in all layers.

A most interesting find was a seat used while pecking and filing the insides of bowls. It consisted of a slab of micaceous gneiss lying upon five pieces of steatite which had flat leveled tops and angular bottoms. This seat was located at one edge of the quarry about three feet deep. There was a distinct transition in the character of the debris which was not found elsewhere. From the top down

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the tools found changed from picks to scrapers as the seat was approached. In front and at the same level as the seat was a horizontal steatite powder layer or floor which extended at least twelve feet in one direction. Below the seat scrapers and lenses of powder were found but no other tools until the very bottom.

Quarry tools consisted of small hand picks, a few larger ones, mauls (one quarter of a small boulder sharpened), cores, hammerstones, and scrapers or files. The latter deserve special mention as they had curved blades, dulled by filing the insides of vessels with a filing and not a scraping motion. All the tools were shaped by chipping.

At least four types of vessels were manufactured here. They were: one with the usual lug handles, a variation with round ball handles, a small but comparatively deep dish with two finger depressions in each end, and a shallow rectangular basin with a depressed rim at each end. One rim fragment was found with a notched decoration. Several pieces were found with striations unquestionably proving that the insides were worked by filing. Vessels were manufactured here at least up to the point of final smoothing during which there was no likelihood of breaking.

Nine vessel blank remainders were found on the steatite ledge. The method of removal from the ledge was the same as described in previous reports.

No evidence of differences in vessels or tools above and below the powder floor nor in the various layers was noted. Our excavation only skirted the working floor so that there may be chronological evidence to be found if future work is done.

A complete report with diagram and bibliography is being deposited with the Department of Archaeology of Phillips Academy, Andover, Massachusetts for reference purposes.

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THE MACON EARTHLODGE

Charles H. Fairbanks

The present paper presents the material relating to the excavation of a circular earthlodge at Macon, Ga. It was excavated in 1934, and restored in 1937 as an outdoor exhibit.

The earthlodge is circular, 42 feet in diameter with a central firebasin and an entrance 26 feet long. The outer wall consisted of a bank of red clay. Four large central posts supported the radial rafters. Opposite the entrance a platform in the shape of an eagle effigy contained three seats. Around the walls from the eagle platform to the entrance were forty-seven seats, each with an oval pocket at the front. The roof was covered with cane and earth. Many charcoal specimens were obtained. Pottery and artifacts established the earthlodge as belonging to the Macon Plateau Focus.

Eight additional circular structures, belonging to the Brown's Mount and Macon Plateau Components, were found. All seem to conform to the same basic type. In later forms peripheral posts were substituted for the clay bank.

Ethnological evidence from the southeast indicates various forms of circular structures from North Carolina and Northern Florida to the Mississippi. The Cherokee and Creeks used a type of circular earthlodge for winter councils and winter dwellings. All these structures seem to have been derived from the earlier earthlodge type.

In the Plains area the earthlodges of the Hidatsa, Mandan and Arikara closely resemble the Macon earthlodge in all structural details. Tribal migration seems to have been the agency of introduction into both areas. The West Coast shows a comparable type of earthlodge. The indicated distribution of the earthlodge is over the major portion of North America and seems to be a relatively old type.

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PRELIMINARY REPORT ON CHEROKEE COUNTY ARCHAEOLOGY
Lynn E. Howard

The Brackett Site, located in Cherokee County in Northeastern Oklahoma and extending for a quarter of a mile along the Barron Fork Creek at its junction with the Illinois River, was recently excavated by the University of Oklahoma in cooperation with the Federal Works Projects Administration.

The Brackett Site was composed of a mound surrounded by a village. Three distinct house types, "Four center post square," "Four center post rectangular," and, "Two center post rectangular," were found. Of the seven houses uncovered five were of the "Four center post square" type with the entrance to the east, and one each of the "Four center post rectangular" and "Two center post rectangular" types. All of the entrances were either parallel trenches or rows of post molds. One of the square houses had post molds set in the parallel trenches. The rectangular two center post house had a trench entrance to the east. No entrance was found to the four center post rectangular house.

Fifteen group burials containing the remains of twenty-five individuals were located in the village. The average burial was a primary semi-flexed type with grave material. The area in which the burials were found was thickly impregnated with charcoal and measured about forty feet in diameter. The burials were shallow, ranging from .5 to 1.5 feet in depth. One burial was superimposed upon another. The burial area was flat; however, due to erosion and cultivation, it may have been a small burial mound.

Grave materials included copper-covered stone ear spools, projectile points, blades, pottery pipes, and pottery vessels. The pottery vessels were water bottles, ollas, curved and carinated bowls. The design elements found upon the pottery included incised lines and punctates. The punctates were fingernail imprints, semi-conical and triangular. Secondary

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features of the pottery were lip tabs and strap handles. The motifs were incised concentric circles, chevrons, vertical and horizontal lines, and punctate-filled areas. The pottery bases were flat dish-shaped, either sharp or stilt, and their rims were flaring or vertical. The temper was sherd, sherd and bone, and shell; the sherd temper being the predominate type.

The mound, a low, flat topped, primary mound with a conical secondary capping, was seven feet in height and one hundred feet in diameter. The primary mound averaged three and one half feet in height and the truncated surface was thirty-five feet in diameter.

One fragmentary burial with no associations was found at the base of the primary mound. The pottery, all fragmentary, ranged from light brown to black. The decorated vessels were scarce, and were used more as grave material than for utilitarian purposes. A shallow midden deposit was found under the center of the primary mound. No traces of a structure were found on the truncated primary mound.

The Brackett Site has a marked resemblance to the main Spiro Mound Village Site; the general vessel shape, design, and ware being the same. This would seem to place the Brackett Site in the Lower Mississippi Phase, Spiro aspect.

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THE NEOSHO FOCUS
David A. Baerreis

One of the new cultures found in Northeastern Oklahoma by the WPA archaeological Project directed by Dr. Forrest E. Clements of the Department of Anthropology, University of Oklahoma, has been designated the Neosho Focus. This culture has been found in seven sites, one a village site and the remainder either caves or bluff shelters.

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The pottery is shell tempered without slip or polish. In the village site the shell temper has often completely decayed. Both the wide-mouthed bowl and the olla are common vessel types. The ollas usually have either a recurved or straight flaring rim and have two strap handles set directly opposite each other. Bases are of the round disc type.

Decoration when present is found on the lip, rim or upper shoulder area and sometimes appears on all three. The techniques of decoration include incising, trailing and wedge-shaped punctate impressions. The lip decoration consists of notching or punctate impressions and the rim and shoulder motifs include: alternate trailed and punctate lines arranged in a zigzag band about the rim and shoulder, punctate impressions in areas or arranged in a her-ringbone pattern, and hachured areas of incised lines. The strap handles sometimes bear punctate impressions.

The chipped stone work includes both small triangular points and large stemmed points. Both ovate, pointed ovate and stemmed knives were found. End scrapers of varied shapes were abundant. Other elements of the complex include: grooved, sandstone awl polishers, oval manos, polished celts and bone awls. One equal-armed pipe of pottery was found.

Burials are usually partially flexed. Grave goods are scarce and when present consist of bone awls, pottery or shell beads. A small section of twilled plaited matting was found with one group burial.

Cache pits, but no evidence of a house structure was found in the village site. The projectile points in the village site were predominantly of the small, triangular type while the large stemmed points are more abundant in the shelters, although the pottery complex is quite similar in both.

The Neosho Focus as a whole appears to indicate Upper Mississippi affiliations. Many of its traits are quite similar to the Oneota Aspect although the decorative complex is not as elaborate and many other traits are absent.

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THE LOCATION OF THE MISSOURI VILLAGE SITE
Brewton Berry

It has been pointed out by several archaeologists (McKern, Keyes, Griffin, Mott) that the distribution of the Oneota aspect of the Upper Mississippi phase correlates very closely with the known areas occupied by the Chiwere Sioux in historic times. Griffin has stated that "one of the most important pieces of archaeological work in the Middle West is to identify known Chiwere components in Missouri, Kansas, Nebraska, and western Iowa, and to determine the amount of similarity of their materials with those from the sites in Wisconsin and northeastern Iowa." This paper contributes to that task, presenting cartographical, historical, and archaeological evidence pertaining to the location of the Missouri village.

More than a hundred maps of the lower Missouri Valley appeared before 1800. While the cartographers were not in agreement as to the location of the Missouri, a critical examination of their maps leads to the conclusion that throughout the eighteenth century this tribe resided near the mouth of the Grand River, on the south side of the Missouri, in what is now Saline County. The testimony of early travelers, explorers, and missionaries leads to a similar conclusion. Neither documents nor maps, however, make it possible to give an exact location for the village or villages.

A surface survey of the region around the mouth of the Grand River has yielded precisely the results that one would expect, if the theory be true that the Chiwere Sioux were responsible for the Oneota culture. Most abundant in the region surveyed are small Woodland sites, on a few of which occur "Hopewellian" rimsherds. On none of these sites was any trade material found. Four sites in the region are non-Woodland. The largest of these, covering at least 100 acres, is located about where the best of the eighteenth century

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cartographers placed the Missouri. Three small trenches were dug at this site. Cultural material included: extended burials; shell-tempered, incised pottery, with flaring rims and strap handles; thumb-nail and snub nosed scrapers; flat, triangular, straight-based projectile points; buffalo scapula hoes; stone and bone awls; pipes; etc. Little trade material was found in these trenches, but local collectors have found copper, brass, and iron objects. Two other sites were sampled, on both of which the trade material was abundant, and the aboriginal material less conspicuous.

The historical and archaeological evidences make it highly probable, if not certain, that this large Oneota site was the home of the Missouri throughout the eighteenth century.

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AN OUTLINE OF SOUTHWESTERN IOWA ARCHAEOLOGY
Charles R. Keyes

This paper will discuss briefly the archaeological significance of the old soil layers in the deep erosion ditches found among the loess hills of southwestern Iowa. A description will also be given of the archaeological materials found in the earth lodge sites which are scattered over the slopes and upon the summits of these loess hills. The paper is illustrated with lantern slides.

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MINNESOTA BLADE (OR SPEAR HEAD) ASSOCIATED WITH
HUMAN AND OTHER ANIMAL REMAINS
Gertrude S. Evans

This Minnesota Blade (or spear head) has evidences of Yuma. Also some attempts to groove the base, part of which is lost by fragmentation. On one face, at point, a flake gives a shallow longitudinal concavity. Found with powerful human mandibles, and cranial material, and bones of small mammals of Minnesota character. X-ray prints of Blade, and

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of associated arrow point, with Long Island contrasts, show permeability constant. The Blade, or spear head, measures 30.0 mm at greatest transverse diameter, and 105.0 mm at greatest length. Index cannot be taken, as both point and base are badly fractured. Probably there are fourteen primary flakes at edges, this allows 7.5 mm per flake, short triangular flakes placed at edge, apex to ridges. Other flaking evident, to increase sharpness. At point, on one side only, a definite face flake increases thinning, measuring 10.0 mm. wide, and 21.0 mm. long. Additional chipping here shows further treatment. A perpendicular line finishes the point of triangle. Base cannot be fully described, as part is lost. There is no groove, as in Folsom, but a slight concavity transversely from flaking. This Blade weighs 37.0 Gm. The accompanying arrow point weighs 7.0 Gm. Greatest thickness of blade beyond middle, thicker towards distal third, thinning towards base. The scoop at side just beyond basal portion shows intentional flaking, and beveled edge on upper curve. Roberts says, true Folsom may have occasional dulled or smoothed edges for about one-third from base, this Minnesota blade is slightly dulled. Blade does not show Folsom indications, although triangular flake at point might seem transitional. It approximates the spear head frequently found in Japan province of Utzen, in flaking; midrib. Deep conical chipping, right angled, and with downward trend toward base, approximates cut on right edge of Minnesota blade, location same.

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THE AMATEURS' OUTLOOK

W.C. McKern

It might be better if the amateur students of American archaeology would take it upon themselves to discuss their own outlook in this or other available publications, as indeed a few have. I am classified as a professional by those who are interested in such classifications. I should greatly prefer, however, to be classified as a student of American archaeology, with all other students of the subject whether amateur or professional. If I should leave my present position and accept one in some other field of endeavor, my interest in archaeology would lead me immediately to join the ranks of the amateurs.

There is nothing in the word "amateur" to signify inferior status. Rather it merely implies that one who is actively interested in a subject follows that subject for his interest in it, and is not employed in a professional capacity. Neither "amateur" nor "professional" is a term which carries with it the connotation either of good or bad qualifications; a professional may have a very limited knowledge of his subject, and an amateur may be generally recognized as an authority.

The chief difference between most amateurs and most professionals, as regards knowledge in the subject they hold in common interest, is one of opportunity. The average professional has the advantage over the average amateur of having received a degree of specialized training, and of having benefited from experience not generally available to all sincere students of the subject. This, however, is not equally true of all professionals, and does not apply to all amateurs. There are degrees of acquired archaeological knowledge among professionals, and also among amateurs, and the two groups overlap in their relative qualifications. Thus, on a basis of professional or amateur status alone, no student has any justification for looking either down with superior condescension, or up with a feeling of inferiority and resentment, at a fellow student.

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In any case, it would appear logical that rational human beings would exhibit greater interest in collaborating in increasing their common knowledge of their special hobby or profession rather than in making unprofitable exhibitions of jealousy, snobbery, blind distrust, pedantic conceit, or other purely emotional phenomena. Inasmuch as we find ourselves in the same boat, headed toward the same shore, the only sensible thing to do is to pull together. No doubt we will come to know each other better and to have more respect for each other by working thus shoulder to shoulder. That has been the experience of many amateurs and professionals who have already established cooperative relationships.

What is the outlook for the amateur archaeologist? His opportunities for productive advancement in any available field are limited only by the time he can devote to his studies and by his own capabilities. He may remain fundamentally a collector of materials, or he may become a highly specialized technician. The choice is his; amateurs have earned the status of advanced specialists, and have made outstanding contributions to knowledge in such highly technical subjects as geology, biology, chemistry, and astronomy. Whether collector or specialist, the amateur may so conduct his activities that he will contribute to the advancement of archaeology and derive the full measure of enjoyment from his efforts.

There has been some grumbling about the use of new words on the part of many amateur archaeologists. It is true that specialized students are becoming more and more technical in their language as important and necessary technology is developed. Consequently, most of the amateur students are less and less prepared to meet the specialist on a common plane of information, or even language. Although it is probably true that certain technical students employ an unnecessarily ponderous vocabulary, consciously or unconsciously, it should be remembered that a growing science (and I sincerely hope that archaeology may be so classified) requires an

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expanding terminology. New processes and new methods bring with them, necessarily, new terms. There is no specific human study, whether it be science, art, music, literature, law, agriculture, religion, or horse racing, which does not have its own peculiar language. As the study develops, the specific terminology grows with it. Any objection to an increase in terms which must be learned and understood is an objection to progress.

The amateur has the choice (1) of limiting his active interests to relatively simple, local aspects of his subject; (2) of being satisfied with following the general results of archaeological research; or (3) of devoting the necessary time and application to the intensive study required to keep up with the specialists -- to become a specialist himself.

The professional must make a similar choice. The student who specializes in Mississippi Valley archaeology will not be wholly familiar with the methods and related terminology employed by the Middle American archaeologist, or vice versa; nor will either entirely understand, from knowledge acquired in his own specific field, all the methods and related terms used in the Southwest. Moreover, as new procedure, and new words adopted to define that procedure, come into use, the professional has to learn the new terms, just as the amateur does, if he wishes to remain progressively conversant with his subject. The amateur is not the victim of discrimination; he has the choice of going along with the professional just as far as his desires may urge him and as available time for work will permit. If he can only go part way, he has no cause to feel left out of the picture. To one who is sincerely interested, there is pleasure in accomplishment at various stations along the road, not only at the more advanced stations. No one ever reaches a final station.

American archaeology has need for services and support, whether specific or general, whether

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great or small. The professional student needs the amateur. The amateur needs the professional. Archaeology needs them both. It is highly important that thousands of amateurs and professionals should contribute, each his own variety and quantity of information, and that they should be closely associated and cooperative so that each may benefit from the contributions of the others. It is to be hoped that, as in the past history of American archaeology as well as of other sciences, the ranks of our intensively specialist students shall include amateurs as well as professionals.

No interested student, regardless of his specific status, should feel that any contribution he can make to the subject is unimportant, no matter how great or small its scope may be; no matter how simple or complex its nature. The pleasure experienced by the worker from the work itself is the true reward for the labor, and no one can deprive the worker of that reward.

All sincere students desire to hear the ideas of other students regarding such matters as methods; including both such simple processes as mending broken arrow points, numbering specimens, or displaying small collections, and such relatively complicated processes as the classification of artifacts, excavation technique, or culture classification. This note book belongs to you. It is gotten out through the expenditure of your money. Why don't you use it?

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SOME POINTS ON BONE PRESERVATION

H.R. Antle,
Sulphur, Oklahoma

Sometimes it is desirous to preserve skeletal material regardless of the extent of disintegration or fragility of the bony substance. Particularly is this true where the remains are of great antiquity. With the present archaeological program, human remains do not always receive the consideration which they should warrant. The usual procedure is to expose the remains, photograph, map, and measure, then disarticulate the skeleton and confine it to some labeled container. Should the bones crumble or are otherwise incapable of being extracted, a note under 'remarks' records the fact.

As physical anthropologists will attest, a great deal may be learned from a study of the skeletal remains. Inbreeding, influx of new blood, dietary effects, ailments, record themselves in the bones. A classical example is found among the ancestral stock of the Pueblo, where stratified burials show the original stock, an infiltration of new blood and a final dominance of the latter. All this physical change parallels a corresponding change in the cultural status.

When and if the Folsom man is found, his remains will no doubt be "a trace of calcium". Every effort will be made to preserve these remains for study and museum display. And likely as not, the find will be, as has happened in the past, the result of some amateur's week-end digging. It is strongly suspected that as many if not more, laymen and amateurs read the NOTEBOOK as do professionals seeking ways and means of preserving the material they find. For that reason some simple but serviceable field and laboratory methods are herewith offered to the reader. Perhaps their perusal will assist in the preservation of some rare and unreplaceable find. The writer will never forget his

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feeling as he viewed a heap of crumbled bone that an hour before had been an excellent specimen of a mammoth crania. It had been dug out by two local men, lifted intact to a dump-truck bed, then started to the town museum. With no protection, the specimen was reduced to mere powder within a few hundred yards.

There are several approved methods of bone preservation, each generally applicable to certain definite conditions. The following presentation is the most economical and can be used anywhere and under any sort of climatic or atmospheric condition. This is the system, somewhat modified, used by palaeontologists to obtain material for museum display.

The field equipment consists of the usual pick, shovel and trowel; in addition there are needed a few pounds of plaster-of-paris, several used gunny sacks, some paper towels or tissue paper, a roll of cotton batting, and an old bucket together with a gallon or more water. The specimens encountered will determine the quantities of plaster, sacking and water.

When the burial, or any other fragile bone is encountered, remove the overlying soil down to a few inches above the object. If, for any reason, digging must cease at this point for over night or for a day or longer, place some protection over the area being dissected. If the ground is damp, treat it as though it were drying concrete, that is, keep a layer of damp earth over the area. Not only will this prevent a hard crust forming but it will also keep the soil from cracking and perhaps breaking the contents within.

Once the overlying soil has been removed, work away the remaining cover only enough to expose the upper-most bone surface. Examine this soil for artifacts or burial cover. This latter may be in the form of clay, basketry, gravel, etc. After horizontal and vertical measurements have been made

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for the record, mark off a quadrilateral to encompass the object in the manner of a horizontal outline (Fig.1). Using this boundary as a guide, remove the surrounding earth downward, leaving the bones in their matrix on an elevated block. This block should be at least a foot high; conditions will determine if this is possible. This allows for the later undercutting. One may judge the proper height by estimating the thickness of the burial basin and allowing for plenty of room beneath this.

With the block isolated from the surrounding earth, it can be pared down to eliminate excessive bulk. After this dressing down, the condition of the object indicates whether a layer of cotton must be used for additional protection while the object is enroute to the laboratory. Since cotton is cheap its use is strongly advised in all cases.

First, place one or two layers of tissue over the exposed upper surface of the block. A sprinkling of water helps the tissue to adhere. Next cover with a single layer of the cotton batting. A layer of tissue paper goes atop the cotton. If the cotton is omitted, use an extra layer of the tissue.

Meanwhile the gunny-sacking should have been made ready by cutting into strips of approximately ten inches by two feet. These are soaked in water preliminary to being impregnated with a thin plaster-of-paris solution. To prepare the latter, add enough plaster to a half-gallon or less of water to make a thin mixture. This will be enough to treat six to eight strips; more of the mixture can be made up if needed.

Place the plaster-soaked strips of sacking over the top of the previously paper-covered block. Lay the strips parallel and over-lapping (Fig.4a). Adjust them in such a manner that they cover two or three inches of the block's sides. Since the block is to be undercut, this over-hang should not be too great. After the surface is thoroughly



FIG. 1

Burial on rectangular pedestal, shaded area to be cut away.

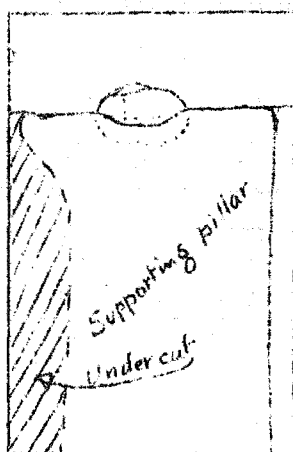


FIG. 2

Illustrates undercutting.

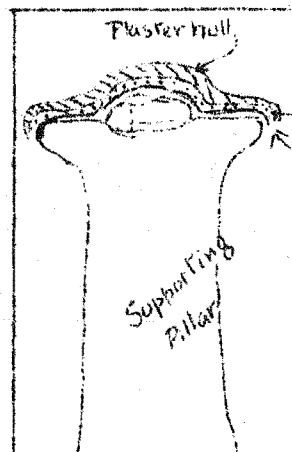


FIG. 3

Relationship of plaster hull to burial.

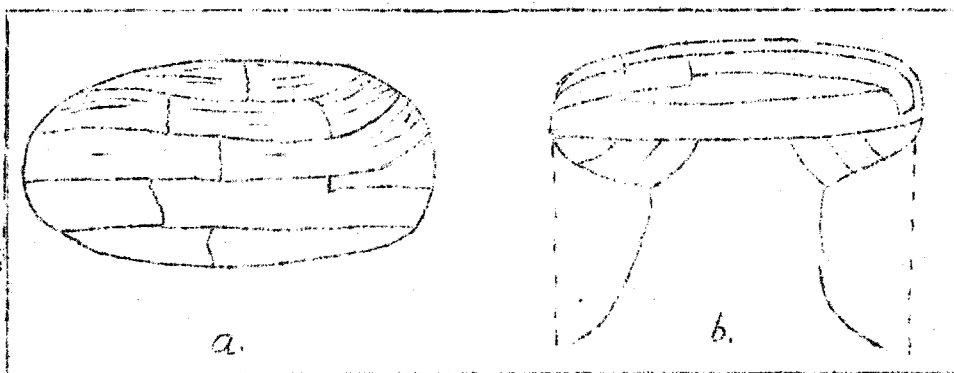


FIG. 4.

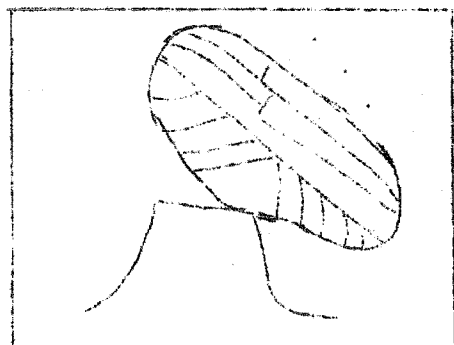


FIG. 5

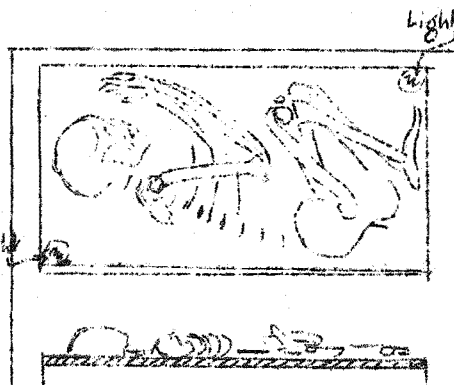


FIG. 6

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covered pour any remaining plaster over it, and smooth it down and into the sacking as much as possible.

Do nothing more until the plaster has well set. The next step is to start undercutting the burial basin (Fig.2). It is well to be certain how far down the burial basin extends. The texture of the earth will determine how sharply the angle can be made; however, it is best to remember that the closer you can undercut, the lighter the block but the greater the danger of injury to the contents. In some human remains it is possible to make three separate blocks, one for the head, one for the thoracic and lumbar regions and one for the pelvis and legs. Position of the remains can decide this.

When the undercut is back eight inches to a foot, prepare sacking and plaster as mentioned above. For the under side, the sack strips could be somewhat longer. Lay them so that the ends will come up and well over-lap the top cover. It is not necessary to have a previous layer of paper; the sacking lies directly on the block. At the junction of the lower and upper cover, tie with a single long, well plastered strip around the block's edge (Fig.4b).

After this new application is dry, undercutting of the opposite side can be done and the plastering process repeated. Lastly, the ends are undercut and the block overturned (Fig.5). Here, the remainder of the underside is covered, a final long strip applied to firmly tie both shells together, and the block is ready for shipment.

A block prepared as above can stand a great deal of punishment with little or no damage to its contents. Not only bones can be removed in this manner but any object which will require long painstaking care in dissection in the laboratory. All such blocks, of course, should bear identification symbols.

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The task of preservation and possible restoration has only started with the field collecting. If the collector is inexperienced in laboratory technique and his find is suspected of having considerable value it is best to turn the block over to competent hands. If the collector is working in his own interests only, the problem of preservation is his own.

Preservation of a discovery is not difficult if properly carried out; restoration is another matter. Restoration is difficult even for the professional. A variation of a few millimeters in alinement when fitting pieces together, or an incorrect faking of missing parts will lead to incorrect and misleading measurements. This is especially true of the crania which generally assumes the most important position of a skeleton.

There is a type of display which is interesting to the observer and at the same time is easy to prepare and yet retains all elements of the find. This is a presentation of the specimen in situ. The method of preparing such an exhibit will be described. After the block is in the laboratory, turn it bottom side up. Tear loose the tie bindings and remove the lower hull only. The base of the block is now exposed. With an ice pick, or some similar instrument, level this base down to a few inches below the specimen. It is possible to even work close enough so that the lower side of some of the bones are exposed. When the base is level across, dampen it and apply a single piece of sacking which has previously been cut to fit the base and has been impregnated with plaster as described for the hull. This gives strength without bulk and will not crack as a plaster base tends to do. Let the plaster set for an hour.

Meanwhile, a case for the display has been prepared. The best type of case is a table arrangement with a glass cover and wooden sides. The cover should be only a short distance above the specimen. This

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permits one to view the exhibit from all angles. Small electric lights might be placed in two opposite corners. A shade is placed over the light to direct the rays downward and outward from the glass (Fig.6).

A base of some light wood, white pine for instance, is cut to fit snugly into the case. Four hooks of some sort are attached to its four corners because the specimen is placed upon this base outside the case and the hooks are used in lifting the display into place. These can be detached later.

When the new plaster base of the block is hardened, turn the block right side up on the wooden base and adjust the specimen to a suitable position. Things are now ready for removal of the upper hull and exposure of its contents.

The hull is removed a strip at a time, or lifted off as one piece. If the contents are extremely fragile, the former is best. After a strip is removed, the bone is exposed, hardened and set, in the manner explained below. When the area beneath one strip has been treated, the next strip is removed and the same action repeated. Strips are removed in a reverse order to which they were put on.

If the entire hull is lifted off, there is some danger of damage to the block before it can be treated. Nevertheless, one may work over the entire surface, letting one area dry while another is being worked out.

At this point have on hand a soft brush, an ice pick, and a bottle of thin shellac. Instead of the shellac, other and better hardening agents might be employed. These are namely the colloidon compounds; Duco glue, thinned; a thin acetone-celluloid solution; or the water-proof cements of commercial use. These latter differ little except in quality. For economy, one may manufacture his

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own glue from clear sheets of celluloid dissolved in acetone. Bottles of varying thinness can be made up. Keep in mind this solution is highly inflammable.

With the ice pick, chip and tease away the dirt from around the bones. Brush away the loosened material at frequent intervals. Uncover a little area at a time then brush it clean. With a pipette, drop thin shellac or glue upon the bone, letting it absorb as much as possible. When the solution is dry, more of the bone area can be uncovered.

A good policy is to work on several areas so that as one dries work can be carried out on another.

If the bone is very fragile, drop the solvent of the hardening solution upon it first, follow with a very thin solution, treating from time to time until the mass is thoroughly hardened.

Uncover as much of the bone as possible, leaving enough foundation to support the individual parts. After the bones are uncovered and hardened, gaps in the block upon the base can be filled in with plaster-of-paris and sprinkled with dirt to give the remains an appearance of resting upon an earthy foundation. The mount is then transferred to the case, lifting hooks are detached and glass adjusted. The exhibit is now ready for a place in the museum.

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CHEMICAL ALTERATION OF ARCHAEOLOGICAL REMAINS

Alex D. Krieger.

One of the most neglected fields of archaeological research is that of soil composition and the reactive chemistry set in motion by the introduction of foreign substances into different types of soil. Of chief interest are the following processes: (1) those which cause or permit decay of bone, animal and human; (2) those which cause particular elements in bone to be gradually replaced by other elements, a turn-over process which under special conditions may eventually result in petrification; and (3) chemical alteration of inorganic matter, leading to patination, discoloration, or encrustation of one kind or another. (1)

Unwarranted assumptions and generalizations have been made by many archaeologists about the age of various remains affected by chemical factors. The whole or partial mineralization of bone, for example, is very often assumed to be concrete evidence that many thousands of years have passed since the bone was deposited. In my own experience I have found that nearly every excavator, upon encountering mineralized bone, almost automatically begins to think in terms of the "Pleistocene". Conversely, absence of mineral replacement in bone tissue is commonly taken to indicate very late deposition of the remains. Further, and understandably, different degrees of chemical alteration of either organic or inorganic remains from the same site are sometimes employed for relative age distinctions when clear stratigraphy is lacking.

Similarly, there is a widespread belief that patination of such materials as flint, chert, and obsidian proceeds very slowly, and that any objects so affected must be truly ancient.

The rate at which chemical modifications actually do take place must vary greatly under different specific conditions. Before proper inferences can

(1) Chemical processes should not be confused with mechanical ones such as staining, coating with sticky clays, bone erosion, et cetera.

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be made about the materials from any particular site, it is necessary to know first, the specific composition of the deposit or matrix in which the objects are imbedded; second, what chemical activators are present, such as moisture, oxygen, salts, acids, et cetera; third, the chemical composition of the intrusive objects under consideration; fourth, the approximate rates at which specific alterations could be expected to proceed. There is reason to think that a certain balance of such factors applied to a human burial, for example, will determine, as soon as the flesh has decayed, whether the bones will begin to decay, or whether permineralization will begin, or whether the bones will be preserved for a time without chemical modification. Possibly two or more such processes may apply to the same burial, with seasonal changes in temperature and moisture.

It seems to me that the assemblage of data and observations on such phenomena, especially on rates of chemical activity wherever these can be observed, may some day provide American archaeologists with an organized fund of information for judging the truth or falsity of spectacular claims. Although such studies may never in themselves provide acceptable dating criteria, certainly they can go far toward dispelling generalizations. Naturally, it would be fully as desirable to assemble data on rates of change in such phenomena as climatic fluctuation, weathering, erosion, deposition, and the like, in order to get more accurate judgments where, as in the chemical field, generalizations are rampant.

The NOTEBOOK should provide an ideal medium for the exchange of ideas on these subjects. Every serious excavator has had some specific and no doubt puzzling experiences with soils and the problems of decay or preservation of bone, (2) as well as with the surface alteration of stone artifacts from different depths and soils. This sketch is intended merely to open up the subject. There can be no question that a great deal of interesting and historically valuable information will come to light if those who have data,

(2) "Bone" may be taken to include, besides the actual skeletal remains of human beings and animals, artifacts of bone, teeth, horn, antler, claw, etc., all of which are subject to chemical modification of some kind.

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either archaeological or chemical, will offer it to the NOTEBOOK for discussion. There must be a large amount of material available on soil composition, especially through geological and soil surveys. However, I am not aware that any important work has yet been done to apply such knowledge to archaeological problems. In the same vein, bibliographical information could be supplied by those possessing it. Again it is possible that some institutions have made exact chemical analyses and will be willing to present their findings.

Consideration should be given to soils associated with cultural materials in campsites, shell heaps, middens, artificial mounds, burial grounds, both wet and dry cave deposits, excessively rocky sites, and so on. Data should include analyses not only of the natural soils included in these deposits, (3) but on the soils as affected by cultural factors as well. Ash composition naturally varies considerably in different parts of a site. Crushed shell, calcined by proximity to fire, probably makes surrounding soil more lime than does whole shell. Decay of flesh and bone may alter the chemistry of a soil, at least temporarily. Micro-organisms, yeast and other fungi, plant roots and decayed vegetal matter are other affective possibilities. Some soils may set up quite different activity when permeated with water than they do when dry. Porous, sandy soils may permit different amounts of water and oxygen to reach buried materials than fine, compact silts and clays do. Caliches or "hardpans" may prevent subsurface water from permeating a site from below. Perhaps the most important factors in the present problem are temperature and moisture, considered by their monthly means and distribution, climaxes, and correlations. The remarkable preservation of wood, bone, and even sinew in the perpetually wet but cold earth of the Arctic sites illustrates a significant point: excessive moisture does not necessarily promote decay in any material.

Perhaps I can illustrate the broader aspects of the studies here suggested, with a few personal experiences. These should be amplified by detailed analyses; but as yet I have not had the opportunity.

(3) Whether "natural" soils can be found within the bulk of a site, or must be sought nearby, will depend upon the nature of the site itself.

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1. In Central California there is a rather rich archaeological field in the low, flat flood lands of the Sacramento-San Joaquin confluence, locally known as "the Delta". Much of this is exceedingly rich agricultural land, and is webbed with an intricate network of channels and sloughs held in course by dikes - both natural and man-made. Spring floods commonly break or overflow these dikes in some sections, covering several hundred square miles of land at a time with shallow sheets of water. Since drainage to the Pacific via San Francisco Bay is quite sluggish in flood time, the inland water sheets may lie more or less stagnant for some weeks at a time, thoroughly permeating those surface and sub-surface soils which, by their structure, permit permeation. At the same time the quiet waters drop practically all of their finest sediments, as well as chemical matter in solution, into these soils.

The alluvial filling of the Delta has a long and complex history. Nearly all entering water comes from the north, east, and south, so that a wide variety of materials has been carried into it from the entire western slopes of the Sierra Nevada, to be deposited and redeposited according to texture, velocity of carrying waters, and like mechanical factors. No less than 18 soil series, represented by 25 types and 13 phases, and at least one organic soil (i.e., peat) have been mapped in the Lodi area alone(4); this is but a part of the archaeological area under consideration.

Archaeological sites are very numerous along past and present stream channels in the Delta and in the Great Valley which extends far to the north and south -- i.e., up the drainages of the Sacramento and San Joaquin rivers. These sites are thus connected with a great variety of soils and all kinds of drainage, from good to very poor. The poorest drainage is in the Delta itself, which is the main deposition sink. It is here, moreover, that the most archaeology has been done, and in which a most instructive relationship exists between drainage, soils, and effects upon archaeological materials.

(4) Stanley W. Cosby and E.J. Carpenter, Soil Survey of the Lodi Area, California, Department of Agriculture, Bureau of Chemistry and Soils, Series 1932, No. 14, issued February, 1937.

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Three principal archaeological periods have been recognized in the Delta area, principally along the Sacramento, Cosumnes, Mokelumne, and San Joaquin rivers. (5) Most of the sites excavated in this area lie between mean sea level and approximately 30 feet above sea level, so that all, or nearly all, are on flat land annually subject to floods. The three archaeological periods: Early, Transitional, and Late, may be recognized not only by their cultural peculiarities but by the composition of the deposits in which the cultural remains are found. Thus, the "Early" period is almost always found in connection with small knolls from a foot or two to six feet high which probably were formed in the meanderings of former water courses. These knolls, as well as the general surface soils surrounding them, are composed of extremely indurated clays. These clays, when dry, are so hard that they have been likened to concrete; modern orchardists often find it necessary to blast them. Cultural material of the "Early" period has so far been discovered only in connection with graves which were sunk into these knolls by the first (6) inhabitants of this region. No camp refuse has yet turned up in the hard clay knolls, so that the archaeologist finds here human skeletons liberally equipped with associated artifacts, all of which are imbedded in clays so hard that they must be chipped away with an ice-pick or similar tool.

The most striking feature in this situation is that the human bones, as well as bone artifacts, are well mineralized, perhaps fifty percent heavier than unmineralized bone, react to the tongue test, ring when struck with metal, and are, on the whole, excellently preserved. There can be no question that the combined circumstances of poor drainage, which allowed mineralized waters to permeate into these knolls and act upon the imbedded bones and artifacts (which are heavily encrusted), together with the composition of the resident clays and the buried

(5) Jeremiah B. Lillard, R.F. Heizer, and Franklin Fenenga, An Introduction to the Archeology of Central California, Sacramento Junior College, Department of Anthropology, Bulletin 2, 1939.

(6) At least, they may be considered the first until there is evidence to the contrary.

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materials themselves, have produced this result. To make this picture even more intriguing, some of these hard clay knolls are capped with loose, ashy middens with much shell, animal bone, and charcoal, as well as human burials and artifacts. These midden caps apparently are just high enough to escape inundation and manifest none of the phenomena mentioned above. Neither bones nor artifacts have been mineralized or encrusted. Not only that, but the bones, compared to those in the underlying domes, are often broken and somewhat decayed.

While it might be adduced that the deciding factor in whether or not the contents of these sites are mineralized is a matter of contour elevation and subjection to flood permeation, (7) the fact remains that there are some major distinctions between the hard knolls and loose, ashy caps. Among these are: 1. the differences shown by more exact artifact inventories than were formerly available, 2. the fact that the caps are evidence of actual and extended habitation, where the knoll materials are exclusively mortuary, 3. an easily recognizable difference in the physical type from each type of deposit, even though the skeletal material has not yet been examined by an expert. There is little doubt, then, that the underlying remains represent an older period of aboriginal history. In this case the older materials are far better preserved than the more recent and are summarily characterized by the extensive mineralization of bone and encrustation of stone.

Here a few years ago, was a situation ripe for another claim to antiquity. Indeed, a brief flare was soon quelled by A.L. Kroeber (8) who cautioned that objective analyses of soils, drainage, and exact chemistry were indispensable to a correct solution. During

(7) A view which I held for some time, in contradiction to that of Robert F. Heizer. However, since he has unrelentingly pursued the facts of this problem for more than six years and the artifact inventory has been published (Lillard, Heizer, and Fenenga, op cit.) the matter of contour elevation is no longer to be confused with cultural stratigraphy, even though it is still basic in consideration of chemical activity.

(8) "Lodi Man", Science, volume 87, number 2250, 137-138, 1937.

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this time, I had some conversations with Charles F. Shaw of the University of California Soil Survey (December, 1936) in which he revealed that the skeletal remains of Caucasians buried in the Delta knolls since 1850 had become noticeably mineralized in less than seventy-five years! Obviously, no such recency can be claimed for the mineralized skeletons of the "Early" archaeological period, for we have at least one, possibly two distinct native cultures postdating it. It can not be stressed too strongly, nevertheless, that the mineralization process can not be taken per se as evidence of any considerable antiquity.

The California archaeologists have treated this matter with extremely good sense. They have, I am informed, gone to the trouble of analyzing the soils and chemistry in some detail. As their findings have not been published, I am in hopes that they will be able to give to the NOTEBOOK a more detailed report than I can.

2. On San Francisco Bay, to the west of the Delta area just mentioned, were formerly several huge shellheaps. The famous Emeryville Shellmound in Oakland is said to have been thirty-five feet high, the Ellis Landing Mound in Richmond twenty seven feet high. In both cases excavations revealed that habitation levels extend downward to six or eight feet below the modern mean tide contour. This is now generally taken to indicate land subsidence around the Bay shores after the mounds had already reached a considerable size. Calculations based on ash and shell content of these mounds give a figure of about three thousand years since human occupation began on these particular sites.

Burials from both Emeryville and Ellis Landing range from surface to depths below modern mean tide. The skulls from the deepest burials appear to be warped from the great pressure of overburden. There are no apparent stratigraphic demarcations in these mounds, from what I can gather from the field notes of those who excavated them. Rather, they were huge and essentially uniform accumulations of coarse soils, ash, charcoal, both crushed and whole shell,

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and a high content of broken rock. (9) It is hardly to be expected that any specific soils can be connected with the preservation of skeletal materials from different depths. However, I believe it can be safely stated that human skeletons from the lowest levels - i.e., perpetually wet sub-surface and sub-tidal levels - are at least as well preserved as those from the middle parts. Bones from burials near the surface of the mounds, where the surrounding material is loose, ashy, and dry during at least several months each year, are in the poorest preservation of all. There is no mineralization in any of these remains, whether from near the surface or thirty feet deep; otherwise the fact of better preservation from earlier horizons is comparable in nature, if not in degree, to the observations made above for the Delta region.

A tentative conclusion may be made: the presence of oxygen in contact with osseous material is a stronger agent of decay than any amount of moisture. Where a deposit is so compact that little or no oxygen can permeate into it, osseous material may lie, even in perpetual moisture, for a long time without disintegration. On the other hand, a loose, ashy, easily sifted deposit permits entrance of oxygen which, together with continual or sporadic moisture, allows decay to proceed. No doubt it is not as simple as this in specific cases. Moreover, only the matter of decay is considered, not active mineral replacement.

3. Western and eastern Oregon present about as great climatic contrasts as may be found anywhere in the United States. The Oregon coast receives heavy winter rains, varying from about 60 inches near the California line to 120 inches off the Columbia river. Temperature is quite equable the year around, freezing and extreme heat being virtually unknown, due to the moderating influence of the Pacific Ocean. The country east of the Cascades, including the middle course of the Columbia river, is more continental. Except in high mountain ranges, the rainfall is only

(9) Unfortunately, the Bay mounds have been largely destroyed in one way or another: by wave erosion, by highway and building construction, etc. These notes are based on my own observations of a few remnants.

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from 12 to 20 inches. Temperatures vary from -30 to about 112 degrees Fahrenheit. As is well known, the humid coast is very heavily timbered, the arid interior, sage and juniper desert.

Having taken part in excavations on the immediate coast, in the climatically intermediate Willamette Valley, in the middle Columbia gorge, and in the Great Basin sector of Oregon, it became apparent to me that sandy soils - and sand itself - are always extremely poor preservatives regardless of climate. For example, at Bandon on the Oregon coast (10) three burials discovered in a house-site datable at 1850-60 lay in loose coarse sand, soaked with rain and ground water most of the year. The bones, when found under a foot or two of shifting sand were, except for a few fragments, badly decayed. Considering that decay had gone so far in about 80 years, we wondered if burials much older will ever be recovered from such sites. Similar conditions were noted elsewhere along this coast, many shellmounds having no osseous remains of human beings whatsoever. However, many bone artifacts in fair condition may be found in these sites of sand and crushed shell.

In the Willamette Valley, on the other hand, many sites consist of sticky clays or semi-indurated soils. A few badly decayed human and animal bones are occasionally found in shallow middens which probably represent fishing and acorn stations. These bones, including those in sites datable in the historic period (i.e., after 1800), have all disintegrated into a sort of cheesy substance which crumbles as soon as picked up. Superficially, these sites are somewhat like the indurated knolls of the California Delta, but for some reason mineralization has never been started, nor has surface alteration of stone.

Along the middle Columbia river, between the Cascade gorge and the Canadian line, archaeological sites are commonly found in connection with huge,

(10) Kenneth E. Leatherman and Alex D. Krieger, Contributions to Oregon Coast Prehistory, Ms in press, AMERICAN ANTIQUITY.

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more or less shifting banks of fine sand and loess. Human remains as well as bone artifacts are commonly hopelessly decayed and sand-eroded through most of this region. This appears to be due primarily to the porosity and leaching action of the sands themselves, and only secondarily to the destructive action of shifting sand. As on the humid coast, skeletons datable at less than 150 years old are so decayed, regardless of varying amounts of moisture present, that it may be doubted that anything more than two or three centuries old is preserved at all.

Interestingly enough, skeletons recovered from rock slides along the Columbia and in the hinterlands, even though apparently contemporaneous with some sand-bank burials, are on the whole better preserved. Frequently, when the huge lava rocks are carefully removed from above such a grave, the bones are seen to be wedged in cavities between the rocks. Although air and moisture reach such bones quite readily, they are fairly solid where free air circulates around them, but are badly decayed wherever they press against the rock. The same result may be noted in cave deposits containing but a slight amount of moisture: pressure against rock appears to accelerate the processes of decay.

4. On dry lake beds in the Great Basin, as well as throughout the arid western plains and deserts, enormous numbers of artifacts are directly exposed to sun and heat, to salts and alkali, to abrupt changes in temperature between night and day. Flints, cherts, chalcedony, obsidian, etc., are common artifact materials and very commonly have undergone a surface alteration termed "desert varnish". This is a form of patination resulting from some chemical activity. Although I am not familiar with the actual chemistry of this phenomenon, my impression has long been that a patination of this kind forms very rapidly; indeed, few exposed artifacts are without some degree of it. Obsidian, for example, is not very different in composition from our commercial glass, yet glass often assumes a thorough patination with a few years exposure to direct sunlight; bits of glass exposed to mineral spring water very frequently assume a brittle coating of chemically-derived encrustation very much like that found on many "ancient" artifacts.

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In conclusion, we have here another aspect of archaeological work in which glib generalizations appear on every hand. We need - urgently - to get information on specific causes and specific effects in specific situations. The results should be of first importance in gaining truer temporal reckonings. May I urge again that those with questions and those with ideas use the NOTEBOOK as a clearing house?

University of Texas
Austin, Texas

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POTTERY RESTORATION
Howard Torrey

Here in eastern Massachusetts there is need for an improved technique in restoring our Indian pottery. Much of this pottery is in a distressingly poor state of preservation - not only broken in small pieces, but the pieces themselves often so structurally weak due to deterioration of crushed shell tempering material, frost action, crushing, and other causes, that workers often throw it away in disgust. Seldom are the pieces of a pot found in a sufficiently strong condition to assemble. Thus, even though sherds here bear a seemingly almost infinite variety of interesting incised designs, our museums display pitifully few restored pots from this area. Yes, there is a definite need for a practical method to make more restorations possible.

Using methods now in use we run into difficulties when attempting to save fragile material. One such method of restoration is, in part, briefly as follows.

1 - Cleaning. Wash sherds carefully in water, using a soft brush to remove adhering dirt, sand, etc., paying particular attention to the edges, and allow to dry.

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2 - Strengthening. Soak sherds in a binder of 10% solution of "Colorless Ambroid" in acetone until air bubbles cease to be given off, drain, and allow to dry. (A weak solution is used in order to get complete penetration and in order that nonnoticeable film be left on the surface).

3 - Assembling. Put sherds together, piece by piece, beginning with the bottom if possible, using "Colorless Ambroid" diluted somewhat with acetone as an adhesive.

The difficulties are encountered in this third step. Here is an example. We sometimes find that a certain piece cannot be put in place because of its shape and the way in which it must interlock with pieces already in place, and that in order to insert such a piece, those that block the way must be removed and the group reassembled in a different order. The method used to remove such pieces is to repeatedly apply acetone to the joints, using all possible care to prevent it from spreading. Even so, it softens the binder with which the pieces are impregnated, sometimes causing weak ones to break in new places, or even go to crumbs, as they are removed. Here is another example. When the bottom of a pot is missing or so badly crushed that it cannot be assembled, and we consequently find it necessary to start work at a higher point, it is then hard to immediately determine the exact curvature of a vessel. More or less crumbled edges of sherds makes their proper alinement somewhat uncertain. Thus frequently the first ring of assembled pieces fails to come together exactly as it should - there is a gap or not enough space. So then, as before, necessary resoftening of joints jeopardizes the structure of the pieces themselves.

To prevent these difficulties we seem to need a different binder - one that is not soluble in acetone, and of course also insoluble in water, or at least insoluble after attaining dryness, so that a restored pot will not be affected by atmospheric moisture. The nature of the binder should be such that it will bridge across tiny cracks and hold particles together even though there is not close contact, and it should of course be unaffected by the heat of summer and extreme dryness, and of a color that will not materially change the appearance of a specimen.

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Many workers use "Alvar 7/70" in place of "Colorless Ambroid" throughout the work of restoration, but its use does not overcome the difficulties set forth. Neither would "Alvar 7/70" overcome the difficulties if used simply as the binder, because it too is soluble in acetone.

Reading, Mass.

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A NEED FOR TERMINOLOGY
Madeline D. Kneberg

In the first volume of AMERICAN ANTIQUITY there appeared a note in the correspondence section entitled "Accuracy in Terminology", by Cyrus N. Ray. In Volume 2 appeared a follow-up by Arthur Woodward. In the succeeding volumes increasing interest has been shown in the subject of terminology, the culmination of which was the recent symposium at the meeting of the Society for American Archaeology in Indianapolis on April 26, and the appointment of a committee to work on the problem. This note represents some impressions obtained at the meeting by one who has struggled for the past two years with the problem and its ramifications.

The purposes to be served by terminological standardization might be more clearly defined. Although terminology is only our tool we must realize that our interpretations and conclusions will be no more accurate than our discrimination of typological entities and our ability to describe them accurately. The present preoccupation with terminology is a symptom of the need for a precision tool to aid in studying culture. In general, anthropologists are infinitely more sophisticated in their speculations and theories than in the manipulation of raw data. For example, there seems to be no purely objective means of demonstrating the difference between the indigenous industries of a community and the evidence of aboriginal trade materials present in a component. Frequently the interpretation seems to come by "divine inspiration", although there is little doubt in most

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cases that experience has qualified the investigator to draw his conclusions. As was pointed out at the recent meetings by Mr. Bullen of Massachusetts, no science progresses very far until it is able to distinguish and designate the elements with which it is concerned, as well as the complex recurring entities made up of these elements.

The spatial, temporal, and cultural relationships of archaeological objects or groups of objects are the ultimate objective of archaeological research but the description required to identify the object must be the preliminary consideration. Concepts, as well as objects, are composed of a number of attributes, and it is hardly sufficient to define names of objects such as "celts", or concepts such as "mediocre workmanship" unless the descriptive terms of the definitions can be standardized. A vocabulary of well defined nouns must be supplemented by equally specific adjectives.

Standard terminology is the first step in classification, and systematic organization is the second. If one archaeologist chooses to ignore all attributes except shape, naturally his organization will differ from that of another archaeologist who includes material. When the individual investigator sets up a classification of his own material he is obliged to start out with a set of limited facts which he organizes for a limited purpose. The work of the newly appointed committee applies to an unlimited number of facts to be organized into a reference system. The purpose of such a reference system is to permit new facts to be related to a comprehensive body of knowledge. It is a working system to which recourse may be made for comparison on the basis of specific attributes or elements. For this reason it is easier to organize the data by proceeding from the most general to the most specific features. The professional and amateur archaeologist alike could employ such a system with equal facility and without the necessity for esoteric knowledge. This does not apply to the presentation of results in publications where it is desirable to employ convenient names as handles. The binomial system of pottery type names used in the Southwest, and more recently in the Southeast, affords a desirable nomenclature for presentation. It represents a generalization derived from analysis of specific details.

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However, it does not enable the uninitiated to make immediate identification of an object because the object is designated by only one physical attribute to which has been prefixed a geographical nickname.

In dealing with material culture there are certain industries which might serve as primary breakdowns. The technical system of a community is intimately related to the raw materials which have been employed in producing artifacts. Thus we have stone, bone, shell, pottery, and metal industries, breakdowns which are universally recognized in presenting archaeological data. In addition we have industries such as architecture and weaving where construction methods and techniques might serve better than materials as the primary breakdowns.

The most important consideration should be the facility with which a special case might be related to the known information concerning similar objects. The characteristic attributes of objects selected by the committee as the elements upon which they will base their definitions should be descriptive characteristics, and applicable to as many materials as possible. To cite a specific example which received some discussion at Indianapolis, the name "celt" is really a secondary term standing for an object identifiable by a definite series of characteristics. In possessing a bit the celt belongs to a large class of "bitted" artifacts. In other features it is more closely related to a smaller group of objects, especially chisels and adzes.

This communication is not intended as a discussion of details but rather as a consideration of objectives to be served by the work of the committee on terminology. If the purpose of archaeology is to reconstruct history and analyze cultural processes, we must bear in mind that the congregation of traits or trait elements in a given instance (whether the instance is an object or an archaeological component,) is the result of a complex series of factors such as historical accident, diffusion, and independent invention. For this reason it seems necessary to ascertain the multiple

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individual relationships of objects as well as the immediate circumstances of their associated occurrence in the community being studied. We might set as our first objective an inventory of American Indian material culture, which is systematically organized for reference and employs a standardized vocabulary. This would aid in consistent presentation of the data and allow the investigator to spend his time on the interpretative rather than the classificatory aspects of research. Archaeologists could spend their time more profitably in adding to the knowledge of history and culture processes than in attempting to set up new schemes of classifying a limited amount of data. They might also find more time to relate their contributions to the great existing fund of knowledge if they were saved the constant duplication of research involved in running down information which should be at their disposal in an organized reference file. The repository for such a file might be the Bureau of American Ethnology unless some research Foundation would undertake the task of preparation and maintenance.

University of Tennessee
Knoxville, Tennessee

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IN RETROSPECT
Douglas S. Byers

Looking back over the year just closed we find the NOTEBOOK barely tottering along. At its birth, this medium was hailed by professional and non-professional alike as a great addition to our archaeological literature. A bright future was forecast for it because of its informal nature. Its purposes seemed to be many, for various members of the Society saw in it at once a means for spreading technical knowledge regarding processes for the preparation and preservation of specimens, for sending up in an informal way "trial balloons" on controversial subjects with the hope of encouraging constructive criticism, for informal statements concerning items of transitory interest that had come up in the course of work, and for encouraging a generally free interchange of ideas and a discussion of problems. In only a small way has this destiny been fulfilled.

In no way can the Editor of the NOTEBOOK be blamed for this state of affairs. On taking over his duties in the fall, he wrote at length concerning the aims and ambitions of the publication; his statements were published in November. Reread what he had to say and you will be interested to see how he has asked for assistance from YOU in making the NOTEBOOK a success. He has cast his bread on the waters, but apparently the fish have eaten it all without being considerate enough to return even a quarter of it, let alone multiply it as the Biblical injunction would have us believe.

Including this release, there have been sixteen contributions to the NOTEBOOK, exclusive of the briefs of papers for the annual meetings of 1939 and 1940. Of these contributions, six have come from the pen of three individuals. In other words, in spite of all the enthusiasm that people work up at various times, only thirteen people have taken the trouble to write anything for this release. Of these thirteen persons, at least three were solicited by the Editor.

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The NOTEBOOK goes to bed for the summer with no material in its files. It is safe to say that the NOTEBOOK will stay in bed until someone comes and makes a noise under the Editor's windows in one way or another; probably the most effective way would be through the call of the postman with something to be published. No publication can survive without something to feed on. If you people continue to lack interest enough to write articles, ask questions, send in bits of information, or pass on technical knowledge then there will be no more NOTEBOOKS, for the Editor can't be expected to do it all.

This release was intended to be something available to all; there's nothing formal or scary about it. If you want to see it perpetuated, you better do something about it. Constructive ideas will always be received by anyone - suggestions are always welcome, but for Heaven's sake send something in.

And so we say "Good-bye" for the summer, "Good luck, and good hunting to you all."

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The minutes of the Indianapolis Annual Meeting of the Society will appear in the July issue of AMERICAN ANTIQUITY. The officers of the Society for 1940-41, who will take over on July 1 are:

President: W. C. McKern
 Vice-President: Charles Amsden
 Editor: Douglas S. Byers
 Secretary-Treasurer: Thorne Deuel

Accompanying these pages is a table of contents prepared for the Notebook by Robert L. Stephenson, of the University of Oregon. The three pages on which it appears are unnumbered, in order that they may be inserted at the beginning of the file if desired.

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THE NOTEBOOK - SO WHAT?

An Open Letter

from

Carl E. Guthe

Now that I am no longer an officer of the Society, I should like to talk over with YOU, as an individual member of the Society, the future of the NOTEBOOK. For some reason or other it does not seem to click, and I am hoping that you may be able to help in giving the editor, Fred Johnson, some ideas and encouragement.

The concept of an informal mimeographed bulletin of the Society, which might be THE NOTEBOOK, was written into the By Laws for two reasons. Many of us felt that the mimeographed releases of a number of local archaeological societies were proving very useful in maintaining the interest of individual members. Moreover, realizing that many potential members of the national Society might hesitate for several reasons to have their ideas placed in print in AMERICAN ANTIQUITY, it was felt that an informal bulletin of this kind would give such individuals an opportunity to express themselves.

The first pages of THE NOTEBOOK were not issued in 1935 during the first year of the Society because of the cost involved, and the uncertain number of possible members. As time went on it became more and more evident that some informal bulletin of this kind should prove to be of interest to the membership. Finally, after many months of discussion and planning, the first pages of THE NOTEBOOK appeared in February, 1939, on a schedule with which you are all familiar. We still had some doubts as to the advisability of this increased service, because of the costs involved. However we felt that if the membership approved of the idea, it would certainly be worth continuing.

I wonder if you realize what is involved from a practical standpoint, in issuing THE NOTEBOOK. In the first place Frederick Johnson, at Andover, Massachusetts, must edit the contributions received from members, when and if they are received, for he has assumed the editorship

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of this bulletin as a labor of love. The clerical staff at Andover assists by cutting the stencils which must, however, be purchased. These stencils are then sent to the Museum of Anthropology at the University of Michigan where a thousand copies of each stencil are run off on the mimeograph machine, and then sorted preparatory to being placed in envelopes and mailed. While the Museum contributes the use of the machine and as much of the time of its staff as it can, the paper, envelopes, and postage, must be purchased, and frequently the labor of additional help hired for this particular job must be paid. Depending upon whether a 1½¢ stamp or a 3¢ stamp is used on each envelope, the postage alone for each issue amounts to between \$12.50 - \$14.50 or \$25.00 - \$27.00. These supplies, extra labor, and postage, for each issue amount to about \$50.00 or \$300.00 for six issues a year.

Since the total income of the Society is secured only from memberships, and since it is just about large enough to cover the cost of publishing four thin issues of AMERICAN ANTIQUITY and pay the cost of much needed clerical assistance for the editor and the secretary-treasurer, it is doubtful whether it is worth while spending \$300 on THE NOTEBOOK unless the members want to continue this informal mimeographed bulletin.

The only way in which the editor of this bulletin can determine what the members of the Society think of it is through the receipt of contributions and comments. During the last six months and more very very few contributions and almost no constructive comments have been received. Something is wrong. To be sure there is a small handful of members who have expressed an opinion on this subject. But the editor does not know what you as an individual think of THE NOTEBOOK, and there should be some way in which he can get that information. In our democratic form of living it hardly seems fair to ask Fred Johnson and a small handful of his personal friends to work hard in getting out issues of THE NOTEBOOK for you, without any help on your part.

A number of suggestions have been made. One of them is that the pages of THE NOTEBOOK be issued irregularly as and when sufficient material becomes available. Another is that THE NOTEBOOK be devoted primarily to notes from the

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several local archaeological societies. A third is that a number of pages of THE NOTEBOOK be devoted to listing all of the local and regional archaeological societies and outlining their objectives and membership. One of the original ideas for THE NOTEBOOK was that it be an informal forum for the discussion of a variety of archaeological items of interest to the members. It was also hoped that it might develop into a means by which the members could ask one another questions and receive answers.

I still think that THE NOTEBOOK is a good idea, and I cannot for the life of me figure out why it does not seem to work. Won't you as an individual member of the Society please look over the back pages of THE NOTEBOOK and then send Fred Johnson a message telling him what you think of THE NOTEBOOK to date and what you think should be done about it in the future? Unless there is positive indication that the members want to continue THE NOTEBOOK, I certainly think the Society should not continue to spend \$300 upon it.

You all know that the success of a radio program sponsored by commercial firms is judged by the response of those who listen to it. THE NOTEBOOK should be judged on the same basis. I know nothing would please Fred Johnson more than to get a big batch of fan mail which would enable him to reach a valid opinion concerning the usefulness of THE NOTEBOOK. I know he will tell you all about it in subsequent pages of THE NOTEBOOK if you will give him something to talk about.

Sincerely,

CARL E. GUTHE

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A FEW NOTES ON THE USE OF TRADE GOODS IN ESTABLISHING
HISTORIC CHRONOLOGY OF ARCHAEOLOGICAL SITES

Arthur Woodward

During the past few years excavators in all parts of the United States have been working on archaeological sites having very definite historic backgrounds. However, in many instances the students employed in such work have discovered that the old methods of describing European materials found in conjunction with aboriginal remains are no longer useful. It now becomes important to know, as nearly as it is humanly possible to determine, when these objects were obtained by the Indians. The identification of specimens of European origin in a more precise manner becomes necessary because, it not only gives the archaeologist very definite period dates for his occupation of the site, but it also enables him to judge in a more logical manner the persistence of certain aboriginal cultural traits in the various areas. Toward these ends the archaeologist is turning more and more to a better analysis of the once despised European cultural remains.

In this brief outline I shall endeavor to present a few of the items which may be used as common denominators in assembling chronological data. I shall not attempt to give descriptive details, how to determine the relative values of each specimen or class of materials so used. Each division of such specimens has its own voluminous background and the student who encounters these scraps of his own ancestral culture will discover that the study of any one phase of his own tribal ethnology and archaeology is far more extensive and time exacting than the often vague and indefinite determination of prehistoric cultural remains of the American Indian.

Glass Beads: These insignificant and often worthless baubles may well be termed the most common denominator in determining the answer to almost any problem in historic-archaeological chronology. Glass beads were from the first contacts in the 16th century the one stable trade element among practically all of the tribes of North America. They have continued in vogue until the 20th century. Thus we have a virtually unbroken pedigree of a trade element which can be traced down the centuries in

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the different regions. The use of glass beads in determining the chronology of any historic site is dependant upon a number of additional factors. First, the mass of evidence as produced by the presence of certain type beads found in a number of scattered sites throughout the country must be considered in relation to the presence of other European materials of the same period. Once these fundamentals have been established for type specimens, then, the type specimens can and in most cases do, stand by themselves, and the student who has become versed in the field of historic archaeology can make his field deductions without recourse to extensive references on the subject. A safe rule for archaeologists encountering historic material is to date his discovery from the presence of the latest material. Thus we may find 17th and 18th century specimens on the same site. However, it is obvious that if certain types of glass beads which were made in the 17th century, and did not carry over into the middle of the 18th century, are found in conjunction with beads that did not originate until after the middle of the 18th century, then the problem is reduced to a simple premise; the burial or house site upon which these 18th century beads have been discovered mingled with 17th century beads, must belong to the 18th and not the 17th century.

The use of other European specimens from this or other sites now becomes important in deciding when in the course of the 18th century these particular beads were obtained. The 17th century beads offer a chance for speculation as to how they happened to be there but in reality they are unimportant when the mass of evidence supports the 18th century determination of the occupation of the site or cemetery.

To supplant the bead evidence it then becomes necessary to furnish proof of the origin of the other 18th century specimens. This is done by a multitude of approaches. There are known dates for certain mechanical inventions. Documentary and contemporary pictorial evidence in hundreds of volumes and graphic representations of the different periods of European history is plentiful. Museums and private collections

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contain actual dated specimens. The amount of evidence one may gather is limited only by the patience and ingenuity of the student doing the research.

Even in the manufacture of glass beads certain methods of manufacture as well as sizes, shapes and coloring of the beads enters into the picture. Tribal preferences, sometimes based upon aboriginal beliefs, play an important part. Thus in 16th century Mexico one might readily expect to find large, green glass beads on historic contact sites in those areas where jadeite played such a prominent part in the economic and religious life of the people. Similarly one might expect the quick adoption of red coral beads or imitations of the same among our own Southwestern Puebloan people, based upon the extensive usage of the shell beads of the same general appearance in texture and color that were traded in aboriginal times from the Gulf of California.

Likewise, in an area where quill-work was the principal mode of decorating garments, one might expect to find the fine seed beads in greater quantities than in a region where quill-work was not practiced. Of course, these observations may not always hold true, but frequently they can be used as a theoretical base upon which to work until such theories are nullified by a mass of contrary evidence, or are confirmed as facts by an equal weight of positive evidence.

Gun and Sword Furniture: The metal remains of European weapons offer another fertile field for determining the periods of Indian sites. Firearms and all sorts of edged weapons and pole arms evolved along very definite lines. Naturally, as is the case with all objects of material culture of almost any group of people, there are examples of cultural lags wherein the invention of one period is carried over into the succeeding period or periods. So it is with European weapons. On the other hand, the new inventions, for example, the methods of igniting powder in hand fire arms, do occur within definite periods and old methods become obsolete. Similarly the hilts and blades of edged weapons, swords, sabers, daggers, etc., change radically under the influence of different schools of defense and offense. There are national traits visible in such changes and these are reflected in the decorative

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elements and the workmanship of the various specimens. Not infrequently we find that an 18th century hilt may be refitted with a 19th century blade, or vice versa, an 18th century blade may have a 19th century hilt. This interchange has continued for ages. Hence, it behooves the student to know these changes in order that he may not become confused in his chronological determinations.

Metal axes whether of the common woodsman's type or battle axes of earlier periods offer other problems. When such items are copied and recopied, it is necessary to recognize the slight changes in order that proper diagnosis of that particular specimen may be made. Pipe tomahawks from various tribes offer a fertile field for such research.

Military weapons of all lands offer some of the best example of identifiable material. Usually, the military were the first to standardize equipment and often they are marked. Similarly manufacturing companies making both civilian and military equipment frequently add their marks. 16th, 17th and 18th century European specimens often bear guild trade marks. Famous armourers left their stamps upon all manner of weapons. Thus, it may readily be seen that a careful and close scrutiny of every scrap of metal found in an excavation is necessary if one is desirous of making a more accurate determination of the period of the material found.

Ornamental motifs on gun locks and all manner of gun furniture, particularly brass and bronze, silver or German silver, ornamentation, trigger guards, thimbles, butt plates, etc. may indicate the origin and period of the piece.

The shape of gun cocks, size of flints, colors of flints, workmanship on flints, etc. all have a distinct bearing upon the problem. Methods of rifling, shape of barrels, size of bore, these too play their part in the analysis of fire arms of all periods.

European Ceramics: This is a field seldom explored by the students of American archaeology and ethnology yet

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it is most important when one encounters fragments of European or American porcelains or pottery.

Needless to say the ramifications of this study are endless but it must be remembered that there are specialists in this field who have been able to trace the life histories of different wares more thoroughly and precisely than any aboriginal ware will ever be traced. Hence we have introductory dates and closing dates in the manufacture of certain European ceramics. Many fragments are marked and thus are dated. Hence the sherds of European or American vessels are most important in checking the periods of those sites upon which they are found.

Of course there are wares, or possibly I should say, fragments of wares that are too nondescript to provide accurate identification. In such instances miracles should not be expected of the specialist making the identification.

Clay Pipes: Included under European ceramics are the pipes, usually of fine white clay, found on many Indian sites. As with all objects of foreign manufacture, these pipes have definite period characteristics. A few criteria to be remembered in judging pipes manufactured in England, Holland, France or the United States are, size of bowls, presence or non-presence of the spur or heel, the shape of the spur or heel, length of stem and last but not least the sundry initials and other marks on stem, bowl and hell. When fragments of clay pipes of European manufacture are encountered, they should be scrutinized for all of these little means of identification.

Metal Ornaments: Within certain areas metal ornaments consisting of bracelets, finger rings, brooches, ear rings, head bands, gorgets, crosses, hair plates, hair pipes, etc. may be found in copper, brass, silver or alloy such as German silver. These should be examined for initials of the makers, or, if the objects are of good coin silver a series of hall marks.

The silver ornaments offer the most accurate methods of obtaining dates for the manufacture of the pieces in question. The decorative motifs and style of design frequently aid in placing the objects in a definite period. The baser metals, copper, brass and German silver are less

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valuable as time checks, with the possible exception of German silver which metal occurs within the first three decades of the 19th century and continues in vogue until the present day. Here style of ornament and designs aid in the dating of specimens.

Not infrequently thin sheet silver or German silver was used as ornamental inlay upon the stems and metal blades of pipes, tomahawks, gun stocks and pistol butts. These ornaments are sometimes found in burials or on village sites. The custom prevailed among certain tribes east of the Mississippi of cutting up or hammering out silver medals or ornaments issued to them by the various nationals. Sometimes these scraps of reworked metal bear very definite marks that are valuable in making identifications, hence no fragment of silver, whether in the form of a recognized ornament or rolled into a metallic jingler, should be overlooked as identifiable material.

These are a few of the types of objects of European or American manufacture that should be scrutinized carefully whenever a chronological sequence is desired. Obviously it is impossible in this brief sketch to indicate within each division the methods to be used in such identification. However this simple outline may serve as a guide to students working in the archaeological field when they find specimens of other than aboriginal manufacture and turn their thoughts into allied channels of research which will ultimately prove beneficial to them in their anthropological pursuits.

* * * * *

ON CAVE ANALYSIS

Robert M. Adams

Missouri is dotted with large numbers of cave shelters, many of which have been occupied by the aborigines. The most famous of these are the cave shelters of Missouri and Arkansas made known by the

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investigations of M.R. Harrington (1) and the investigations carried out by C. Peabody, W.K. Moorehead and later by V.C. Allison at Jacob's Cavern (2). More recently Dr. Carey Croneis, geologist of the University of Chicago, has been carrying out investigations at the Saltpeter Cave Shelter on the Saline Creek, a few miles from the Mississippi River (3).

Since last November the Academy of Science of St. Louis has been carrying on investigations in a large cave shelter known locally as "Hidden Valley Cave" (Js7) near the Missouri river in Jefferson County (4). This site is located a mile inland from the right bank of the Mississippi River. It was staked out in two meter squares. Our excavations started by working the squares in step fashion and in 10 centimeter levels until we discovered fireplaces and artifacts strewn around them at which time we expanded sufficiently to photograph and draw such complexes, fireplaces and groups of surrounding artifacts in one level.

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- (1) Harrington, M.R., The Ozark Bluff Dwellers, AA, n.s. vol.26, 1924, pp.1-21.
- (2) Moorehead, W.K. and C. Peabody, The Explorations of Jacob Cavern, Bulletin #1, Dept. of Archaeology, Phillips Academy, Andover, Mass., 1904.
Allison, V.C., The Antiquity of the Deposits of Jacob's Cavern, AMNH-AP, vol.19, pt.6, N.Y., 1926, pp.297-235.
- (3) Croneis, C., Possible Evidence of Prehistoric Man in Southeastern Missouri, Bull. of the Geol. Soc. of America, vol. 50, no.12, pt.2, Dec.1, 1939. It is my understanding that Dr. Croneis is to publish more fully on this subject shortly.
- (4) A short summary of our work to date in the shelter known as Js7 will be published shortly in the Notes And Comments Section of AMERICAN ANTIQUITY.

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Unexpectedly we were forced to abandon this technique of excavation temporarily because of the appearance of a down dipping humus lens on several of a number of stratification control blocks, 50 centimeters square, that we had left standing at the corners of squares. We had a suspicion that this downward dipping humus profile represented a more recent silt fill and that debris at the ends of the shelter flanking this more recent fill was an original earlier fill that had not been eroded away. Our technique of excavation was then changed to work out a trench clear across the shelter under the overhang down to bed rock within the grid system. As a result we were able to take photographs and make drawings of vertical elevations showing relationship of the various horizontal dark lenses left by occupation. Thus far our theory that there was a later and an earlier fill was demonstrated and has justified our modified excavation technique. The most important results of this modified procedure in this particular instance is that it gave us a preview of the sequence of cultures as indicated by horizontal occupation lenses and by counts of artifacts and sherds according to level. The result is that now we can approach the remaining deposits expecting to find continuation of levels of occupation already determined by our preliminary trench.

Excavation on another small cave shelter (Js30) in the southern part of the same county presented a different problem. Here the deposits lay out in the talus bank in a narrow strip under the furthest outward extension of the overhang, while the shelter floor was completely barren (5). These deposits were intermingled to such a very great extent with fallen rocks from the shelter roof that it was necessary to work everything out in 10 centimeter levels within a trench 2 meters wide. We could not hope to photograph relationships of horizontal lenses here to give us a preview of what to expect in further excavations.

(5) Except for a number of very low stream outlets or very small caves in which we found numerous sherds and artifacts.

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Our experience has been that excavations in a shelter in short vertical levels within a well defined grid system leaving adequate control blocks standing in the nature of squares or smaller blocks at given intervals is absolutely essential. However, after these rules are observed it seems necessary to modify cave shelter excavations if possible to obtain the clearest preliminary picture of not only the archaeological but the geological situation involved as soon after excavations have started as possible. Thus far our investigations in this region have shown us that cultural materials are found in pockets and indicate that the cave shelters were occupied by many small hunting parties over a long period of time.

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OUR NOTEBOOK - WHAT IS WRONG?

Roscoe Johnson

In the last pages of THE NOTEBOOK an article by Douglas Byers points out that material for these pages has been coming in so slowly that without increase THE NOTEBOOK will not exist. These pages are too valuable and important an instrument to the amateur in particular to be lost.

To the writer it seems that the failure of material to "show up" for publication may not be due as much to the fact that material and questions do not exist as that the answers are being found and material used "nearer home".

The NOTEBOOK seems to be the means, and only means, for the active as well as the inactive archaeologist to present his informal problems and ideas before an international membership for answers and aid. This point is something to "size up" well.

The active or professional archaeologist by the very circumstances that make him a professional (active experience, museum work, literature at hand and contacts) would not it seems have the number of questions to ask as would the inactive or amateur side of the group. If this is a

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fact, it drops the fault right into the amateur's lap.

If the writer has grasped activities correctly, at about the time THE NOTEBOOK was born there was a general bursting out of state societies and these subsequently divided into local groups. Just how many state societies exist the writer admits he does not know.

Right here let it be clearly stated, that no misunderstanding may arise, the writer whole heartedly believes in the formation of the state societies but also believes, and thinks no one will dispute, that THE NOTEBOOK is the only avenue open for putting your point before the archaeologist of the country at large as well as to those members beyond our boundaries. And that which is good for the majority certainly is right and should not be lost.

It must be admitted that any such far flung organization as the national society, or rather international society, cannot sponsor or supervise mapping of local sites, the digs, or pay any such particular attention to local activities as these state societies can and do.

It certainly must seem to the members of the various state societies that these state societies are much closer to them than the inter-national society, as the meetings, digs, and like activities of the state and local bodies are within reach. It naturally is, as something that can be reached at and touched, sort of a realistic being, while the meetings of the inter-national society can be attended by a very few, although, open to all, and somewhat of a feeling may exist that this is a meeting for those higher up. Something that can not be reached at and touched, sort of a spiritualistic being.

As stated above, the writer does not know the number of states having societies, but that they are increasing seems certain. Also, he thinks that many questions and articles that would come to THE NOTEBOOK if the state organization did not exist are being answered and presented by and to these separate societies,

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as the feeling of closeness in these societies naturally gives the individual a sense of having more elbow room and his problems are taken up personally with friends and acquaintances, among whom is usually one or more active members.

It would seem that if these questions and problems are really worth presenting to a few for their views, that some of them should be presented to the NOTEBOOK; that the views of a greater number of persons certainly would be a much broader view, and members of the inter-national society, not belonging to the particular state society are just as interested in many of the questions and problems as are the members of that state society. When these questions are merely put before the state organization they do not get beyond them. Just a little time plus postage will let us all in on the news, and we will all gain by seeing the replies to these points.

Often a question may have more than one answer. Different personal views and the chance of obtaining the broadest point of view lies in the wide scope of THE NOTEBOOK, so as well as asking your questions in the meetings of the state groups why not send the same question to THE NOTEBOOK. Is not one point of the society the expansion of knowledge?

Many interesting articles of a non-technical nature are often printed in many of the state publications. Why not have the editors of the various state societies send these also to the editor of THE NOTEBOOK?

Mr. David Howell, who made such an interesting and instructive reply "Comments Concerning Mineralogical Terminology", p.42 might, if he can find time, send in an article on the agents of petrification and methods of action, or a short item now and then on other rocks and minerals other than those mentioned on page 42 as there must be many others interested and eager to learn more on this subject.

If any institution or individual is able to inform me as to where I may secure post card sets of aboriginal American house types, I would greatly appreciate it. I would like to get them if possible from the Eskimo's

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igloo to the Fuegan's lean-to, or any part of them.

Keep clearly in mind that no thought of attack on state societies is intended by this article, but simply that THE NOTEBOOK must have material to exist. The shortage of this material indicates that something is wrong and so fine and important an instrument as THE NOTEBOOK, which allows everyone's problems to be placed before members in the four corners of the world, should not pass out without some effort made at least to take its pulse and temperature.

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FURTHER NOTES ON THE DOLLY BOND STEATITE QUARRY

Ripley P. Bullen

In the abstract of my paper on the Dolly Bond Steatite Quarry near Worcester, Massachusetts published in the April, 1940 NOTEBOOK of the Society for American Archaeology, pages 104 and 105, I referred to a horizontal steatite powder floor and raised a question as to the possibility of there being some chronological evidence to be found by further investigation. On June 6th, 1940 additional work was done and the readers of the NOTEBOOK may be interested in the findings.

A trench 6 x 3 feet was put down and the powder floor was found at a depth of about 27 inches. It extended into the excavation from the southeast corner 30 inches to the north and 20 inches to the west. In it was found 1 pick, 1 chisel-like tool and several chips.

Above the powder layer, approximately 250 pieces of steatite were found of which about one-third were worked, two boulders weighing about 20 pounds, 10 picks, 1 hammer stone, 5 scrapers (one with secondary chipping), 7 chips, 2 pieces of gneiss which looked as though they might have been used as rubbing stones and the end of a small narrow vessel with a rudimentary lug

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handle. A lens of powder, 10 inches in diameter was also found near one of the boulders at a depth of 19 inches and just below it the rim of a shallow vessel. There was another lens of powder at a depth of 23 inches and a very thick one 24 inches below the surface.

About 135 pieces of steatite, many of which were worked, were found below the powder layer. Also there were 15 picks, a hammer stone, 2 scrapers, a maul, a small pot blank and the end of a small round vessel with a tiny knob handle. There were also several deposits of charcoal. 85 inches deep there were large pockets of charcoal almost covering the area at this point and in some places about 1 foot thick.

The bottom of the debris was found at a depth of 7 feet 9 inches and lying on top of biotite mica. An inspection of the tools shows no difference whatsoever above and below the powder layer. An assumption might well be made that the north end of the quarry was worked down first by the Indians and the debris piled in that end as the work progressed towards the south, and that at one time a shelf on this debris was used at a certain stage in the laying down of the deposit as a working floor, thus accounting for the horizontal powder layer about 10 feet long by only about 3 feet wide.

The two soapstone vessel fragments found had different lugs, or handles, than those found last year. It is possible that they may indicate earlier or else decadent types, but the evidence is too meager for any hypothesis.

It seems from this investigation that we can be sure that this quarry was used by only one group of people although probably for a fair length of time, due to the superimposed deposits of powder, but not over a sufficient number of years to have any change result in the tools used in manufacturing.

It is interesting to note that picks on exhibition at the Peabody Museum on Cambridge and at the Robert S. Peabody Foundation for Archaeology in Andover are uniformly of a different type than those found at the Dolly Bond Quarry. The ones at Dolly Bond were short and wide,

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single pointed and manufactured by chipping while, in general, the others are long and narrow, many double ended, with comparatively little chipping and in about one-third of the cases are polished at the point by grinding or use. None of those in the Dolly Bond Quarry have this polish. The interesting point is not only that they are different but also that those at Andover and Cambridge come from the Indian steatite quarry at Bramanville which is less than one mile distant from the Dolly Bond Quarry. There are some chipped ones at Cambridge but they came from the North Wilbraham Quarry.

The pot forms from Bramanville are rather close to those from Dolly Bond although more very large vessels seem to be represented.

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"MUXES" - WHAT ARE THEY?

Roy Latham

In the local literature there are conflicting statements regarding the identity of muxes which are mentioned in the early historical records of Long Island. Muxes are associated with Indian deeds in the transfer of land. Prime's History of Long Island states that muxes are small brad-awls used in making wampum. Thompson's History of Long Island says muxes are fish-hooks. Griffin's Journal speaks of them in the sale of Plum Island, N.Y. (1666) as follows: "A barrel of buscuit, 100 muxes and a few fish-hooks, the total value not over ten dollars". Another authority calls muxes eel-spears. Fish-hooks and eel-spears are entirely different implements. The latter are used locally for pulling eels from the mud where they are bedded after frost, or for use with a light at night - whether the natives understood fire-lighting, as this method is called on Long Island, I do not know.

The Beebe family was one of the early owners of Plum Island, mentioned above. One of the aged descendants in the Beebe line, who died years ago in Orient and whose father lived on Plum Island, told me that it

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was understood in his family that muxes were odds and ends - a miscellaneous lot of articles which may have included fish-hooks, eel-spears, tools, household utensils, etc.

While this question is not strictly of an archaeological nature, muxes were the first step removed from the primitive artifact. Perhaps readers of the NOTEBOOK may offer further information concerning muxes.

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USEFUL AIDS TO EXCAVATION USED BY THE UNIVERSITY OF
TENNESSEE
Charles H. Nash

Steel Stakes: For staking out a site we have turned to the use of steel stakes about 3/8 inch in diameter and 2 feet long. These are painted with red lead to prevent rust and capped with small blocks of wood which can be slipped on and off. These blocks are painted white and are used for recording the sq. numbers of the stake grid system. With these stakes, which can be made from any type of steel rod at a very reasonable price, the staking of a site is very much simplified due to the ease and accuracy with which they can be driven compared to the more bulky wooden stake. In addition their permanency makes them a cheaper investment than wooden stakes. Incidentally it has been found that they can be much easier handled if the end is not pointed, but left blunt.

Grading Stakes: Because it is not always possible to have an alidade or similar instrument constantly on the job we have adopted a system of Grade Stakes which are set in or near every sq. and leveled to give even Datum Readings such as 6 feet or 6.5 feet. This reading is then recorded on the stake with lumber crayon. From this stake a rod with a bubble level attached can be swung over the entire sq. and datum readings quickly and conveniently taken. So much does this simplify work with large crews that it has been used even when an instrument is available. By this means workmen within a sq. can constantly check themselves to see that they are digging at a correct depth

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and that the bag into which midden materials are placed is correctly marked.

Sprinkling system: During hot weather work is often hindered by the fact that soil dries out so fast and so hard that such things as post molds, pits, wall trenches etc. become very hard to see if not impossible to find and much in the way of valuable information can be lost. Sprinkling water over the ground solves these problems, however, the method of wetting surfaces, particularly high mound profiles was simplified in the following manner: A fifty gallon drum (preferably galvanized) was fitted with a water faucet in the bung hole at one end. On the side of the drum was a small plug about 4 inches in diameter and this was fitted with an air valve taken from an old inner tube (the old metal type of valve is necessary since the modern rubber ones can not be fitted into this plug). A 50 foot section of garden hose was attached to the faucet, the drum filled with water, top plug screwed on and made air tight with a mason jar rubber ring, and a tire pump used to force air into the drum until enough pressure was built up to force water some 50 or 60 feet. With this pressure system it was a simple matter to keep an entire dig wetted down and in good shape to see all disturbances.

The Marking of Plotted Post Molds: After plotting all post molds within a sq. the archaeologist is then confronted with the problem of marking them in such a way that he will not have to worry with them again on a lower level. To solve this problem we secured a supply of colored clay (red, white when possible or any other which would contrast with the color of the soil in which we were working) mixed it with water until it was thin enough to pour readily. An iron rod was then used to make a central shaft or hole through the length of the post mold and this was filled with the clay paste. This column of clay thus marked the post mold as one already plotted and no confusion resulted as the excavation was carried downward.

Drying Racks: It has been found expedient to wash and clean all specimens in the field as soon after they are found as possible so that Field Men may have a good opportunity to see the material as it comes out. This,

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of course, has many points of vantage since it enables one to interpret and recognize problems of relationship at the time when they can best be handled. Many problems of operating a field "laundry" have cropped up, probably the most serious of which is the drying of material during the wet winter months. This has been nicely taken care of by digging a pit about 6 feet long and 3 feet wide, placing over it as heavy a piece of metal sheeting as can be found, bracing it underneath with metal bars taken from junk yards or wherever found, and covering the whole with a thick layer of sand shifted through a fine mesh screen. Within the pit a fire is built hot enough to warm the sand and then kept smoldering all day long. Sherds, animal bone, specimens of all sorts not hurt by heat are then washed, placed on a piece of paper and laid on the sand to dry. Here one must be careful not to heat the sand too hot since too much heat would scorch or split specimens. A charcoal fire will be found more satisfactory than a wood fire since the heat is better controlled and steadier. Many refinements are, of course, possible in the construction of a heater such as this but this simple procedure will be found very satisfactory.

Ground Plan Board: For ground-planning some of the extensive sites and mounds which we have excavated a very convenient board has been devised. This is composed of a square frame $2\frac{1}{2}$ feet square and 3 inches deep. Within this frame and centrally located on the top side is a piece of plywood fitted so that it takes up about two thirds of the space. This becomes the drawing board over which coordinate paper is rolled by means of rollers placed at either end of the frame between the outside pieces and the drawing board. These rollers are fitted with small metal cranks with a wing nut fitted on so that it can be run up against the side of the frame and so hold the roller fast in any given position. One roller is placed on the frame by means of a slit so that it can be removed, while the other is non removable. The small cranks should be threaded to receive the wing nut before being fastened to the roller. A small iron rod can be driven into the opposite end of the roller and fitted into a washer used as a bearing set into the frame. The roller is placed in the frame, crank handle inserted into a hole drilled to receive it and fastened by a pin run through a small hole drilled through the roller and crank.

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