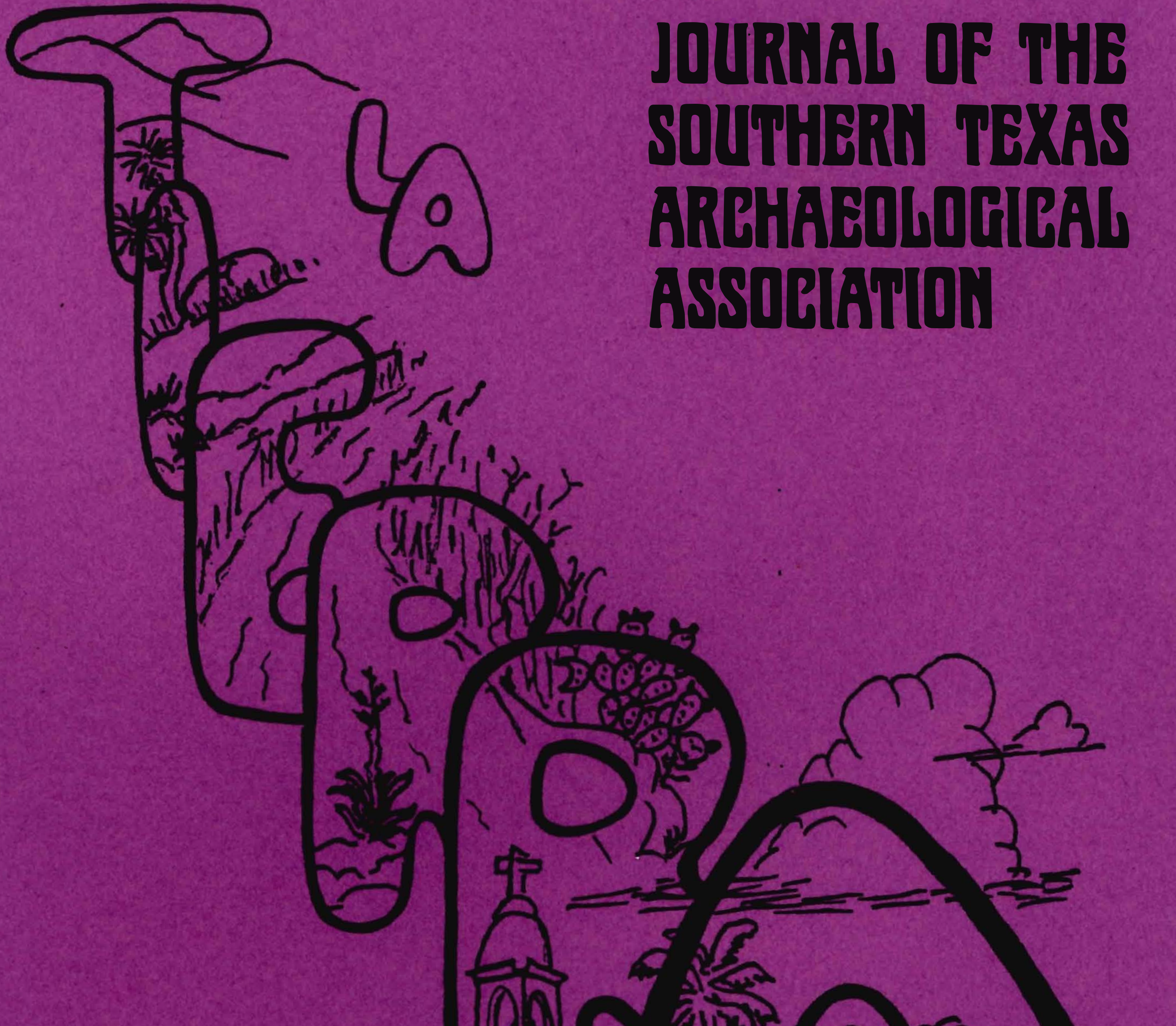

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Anne A. Fox
Journal Editor

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FROM THE EDITOR

We are delighted to announce that our application for tax-exempt status has been granted by the Internal Revenue Service. Contributions may now be deducted from your income tax. Sound the trumpets! Please spread the word.

This might be a good time to reassess your membership status. Perhaps you would like to become a Contributing or Supporting member in light of this new ruling.

Thought you would be interested in the following quotation from a letter from Warren Lynn, co-author of the recently published article on Choke Canyon:

> "This is just a note in regard to the report on 41 MC 185 that appeared in La Tierra, Vol. 3, No. 2: 11-20. Subsequent research has revealed that an additional majolica sherd has been reported from the Choke Canyon Reservoir. It is described as a single sherd of soft white paste, tin glaze from site 41 MC 15. It was collected from the surface of the site along with four sherds of undecorated lead glazed hard white paste earthenware, one sherd of lead glazed hard cream paste earthenware, one sherd of salt glazed gray paste stoneware, four square nails and a variety of prehistoric artifacts (Wakefield 1968: 34; 38-39).
>
> Reference: Wakefield, Walter H. (1968). Archeological Surveys of Palmetto Bend and Choke Canyon Reservoirs, Texas. Texas Archeological Salvage Project Survey Reports No. 5, Austin.
>
> A more detailed description will be forthcoming in the Choke Canyon Reservoir Report presently in preparation.
>
> This occurence would indicate that majolica does occur at other 19th Century sites in the area and that the occurrence of majolica at 41 MC 185 is not an isolated occurrence."

THE SOLLBERGER DISTRIBUTION

Analysis and Application of a Tool Reduction Sequence

Joel Gunn, Royce Mahula and J. B. Sollberger

On September 4, 1976, J. B. Sollberger gave a demonstration in the art of biface manufacture to the members of the STAA.[1] Recognizing this as a veritable gold mine of lithic information, we collected the knapping debris from this exhibition for subsequent analysis. The purpose of this experimental study was primarily two-fold: (1) to study the distributional properties of lithic debris from the manufacture of one biface to detect what useful limitations can be placed on field screening, (i. e. , what percent of analyzable information is being lost by use of the 1/4" or 1/8" mesh screen, and (2) to devise a standard against which the character of archaeological sites could be judged and the nature and extent of the major technological activity could be established.

For the purposes of this experiment, Mr. Sollberger agreed to divide the biface production process into what he considered to be discrete phases in the tool reduction sequence. He defined three basic stages in this reduction process. Briefly categorized the phases are:

Phase I — Decortication and Preforming Phase. Nodule reduction. Hammer percussor (both hard hammer and large billet).

Phase II — Shaping and Thinning Phase. Form determination. Soft Hammer percussor (small hard hammer and medium billet.

Phase III — Sharpening Phase. Finishing and refining. Antler tine pressure-flaker.

During each production stage a polyurethane tarp was employed to catch all the chipping debris. Following the completion of each phase the debris was retrieved, bagged and labeled for analysis.

Debris from each stage was passed successively through 1/4", 1/8" and 1/16" mesh screen. The fraction which did not pass through the 1/4" screen was then classified by size according to a progression of circles (Figure 1, c), each double the diameter of the preceding one, and in the smaller classes (5 to 7), the diameter of the circles corresponding to the diagonal of the screen apertures. Crystal sized particles and tiny fragments of flakes (from crystal size to 2.25mm) which simultaneously occur when flakes are detached were considered shatter and were not dealt with in this study. Flakes retrieved from the 1/4" screen were then coded by phase, class, platform end condition, material and terminal end condition. (The latter two categories were not directly involved in this analysis). In addition to the above classification procedure, the 1/8" and 1/16" fractions were examined for platform flakes and a count of these flakes was added for each phase. Data was then subjected to computer analysis of the distribution of platform flakes by phase and class. Since the goal was to investigate the amount of useful information lost in screening, only an analysis of the distributional pattern of platform flakes was undertaken due to the fact that they are considered to be most diagnostic of the amount of activity (i.e., number of blows struck) and at the present state of the art are the most significant in analysis of lithic debris. The number of platform flakes in each class was calculated and plotted on a bar graph (Figure 2, a) and represents what we will call the Sollberger Distribution. Examination of this figure shows that 80% of the useful information as we define it is being lost in excavations which rely on 1/4" screening. With use of 1/8" screens, 40% of the total is lost. This 40% may sound worse than it is in reality. Platform flakes are recovered by 1/16" mesh screen, but the percentage of platform flakes falls off sharply in the lower part of Class 6. Also, a large part of the platform flakes in the 1/8" to 1/16" range are probably simultaneous removals produced by the same blows that detached much larger flakes. So, as long as platforms and not shatter are considered important for analysis, the information lost through 1/8" mesh screens is negligible and there appears to be little utility in the use of the 1/16" screen, at least for lithic analysis. Although the degree of resolution desirable must be geared to the research goals of the project at hand, it would appear that an important element in defining site activity, particularly in the sharpening phase, is being ignored by use of the 1/4" screen and an effort should be made to recover these artifacts.

In a much broader aspect, the Sollberger Distribution is but a physical representation of what we will call the Phase Model of lithic tool manufacture (Figure 1, b). In brief, the model may be described as follows. The tool reduction sequence might be visualized as a succession of bell-shaped curves - each curve representing one phase in the sequence. Let the median point of each curve represent the ideal flake desired during that phase of production and the rest of the curve represent the normal distribution of flakes about that ideal. (The curve or phase represents, therefore, the ideal and variations from that ideal). For example, the ideal flake for Phase I - decortication - would be a substantially sized flake which would remove the maximum amount of cortex. Variations from that ideal will no doubt occur (flakes either too large or too small) and they represent the rest of the distribution for that phase. Phases II and III likewise are represented by bell-shaped curves, each with ideals for that phase (respectively, "medium-sized" thinning and "small" sharpening flakes) and variations from those ideals. The curve of Phase II necessarily overlaps those of Phase I and III because some further decortication and some initial sharpening will also occur in this phase.

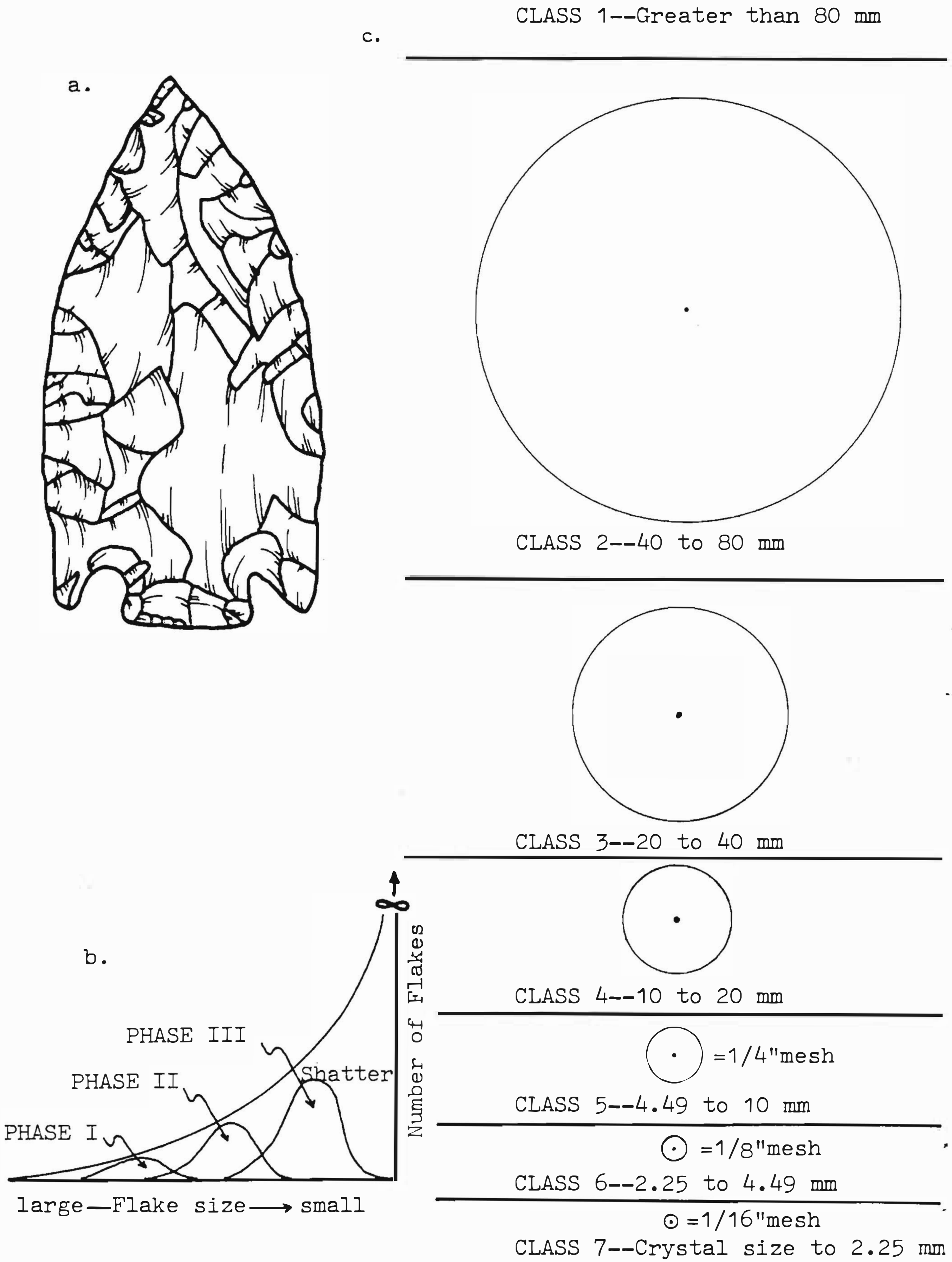

Figure 1. a.Sollberger's finished biface, b.Phase Model, c.Flake Class size measurement device.

In accordance with the model, the number of flakes from each phase would normally be grouped by classes (i.e., decortication in larger Classes 1, 2 and 3, thinning and shaping in middle Classes 3, 4 and 5, and sharpening in smaller Classes 4, 5 and 6) due to the fact that normal variation from the ideal would be restricted to a certain range of fluctuation between classes. A clustering of flakes by classes may therefore be diagnostic of a phase in lithic production (Katz 1976: 114).

The model as portrayed is basically quantitative - number of flakes by class (this is not, of course, to say that qualitative aspects of flakes do not enter into the picture) - the curve is continuously rising and approaches infinity as the shatter approaches the crystalline grain size of the stone. The graph of the Sollberger Distribution would conform to that of the total Phase Model in that it is a curve describing the entire range of phases in tool production.

Carrying the Phase Model to its practical application, if, as suggested, the number of flakes in particular classes may be considered indicative of a phase in lithic production, it seems reasonable that the number of flakes by class might also be used to infer the predominant type of lithic activity going on at an archaeological site. If the highest percentage of flakes from a site fall into the classes normally describing Phase I - decortication - for example, this early-rising curve would be characteristic of a quarry or workshop area where the greatest number of flakes fall into the decortication classes. A site whose flakes describe an intermediately rising curve, as in Phase II with the predominant number of flakes falling into the intermediate classes, might be indicative of an occupation area where both shaping and resharpening were occurring. Phase III could best be described as a hunting camp where resharpening of tools was the dominant activity and would be displayed as a late-rising curve with debris concentrated in the smaller classes. (Incidentally, the amount of information available in this case would be dependent on screen size so that the high resolution of the 1/8" mesh would be desirable.)

Various aspects of the theory of flake propagation proposed above will be tested against the real life facts of the debris from J. B. Sollberger's stone knapping demonstration in this section of the study.

The shapes of the distributions for the various Phases of Sollberger's knapping are shown in the bar graphs in Figure 2, b, c. d. If these distributions conformed to the model we suggested above, the distributions would be "bell-shaped" in outline and each successive bell-shape or phase would have a high point farther to the right than the previous phase as illustrated in Figure 1, b.

As can be seen, the real distributions start out on the left correctly in all cases. Each begins to rise successively farther to the right. Here the resemblance between theory and reality ceases. Rather than rising and then dropping off, all three curves continue to rise. This would have been expected if we had counted shatter and platforms together, but by counting only platforms we hoped to see a succession of bell-shaped distributions.

Faced with this discrepancy between theory and reality, we must ask ourselves where the problem lies. There are two possibilities. The first is that we are totally wrong about the processes which propagate flakes, and it is necessary to start again from scratch with a new model. The second possibility is that we are at least partly right and only need to add some further explanation to the model we already have.

Since the model fits part of the distribution, and since we have no new ideas at this time, we will attempt to patch up the battered old model and see if it will "fly" in a revised edition.

It is generally understood by flintknappers that when a flake is removed smaller flakes are simultaneously struck, mostly off the platform of the larger flake. It seems reasonable that these simultaneous removals would be much smaller than the main flake, probably measuring in the very small Classes 5 and 6, 2.25-10mm. What the ratio of main flakes to simultaneous flakes would be is conjectural at this point. Perhaps their numbers would be greater with larger flakes since a larger flake has a bigger platform for simultaneous flakes to come from. This additional process added to the existing model would explain the unexpected pile-up of flakes at the right end of the distribution curve.

If we assume the propagation of simultaneous flakes is a constant and exponential process, the effect of simultaneous propagation can be removed by a mathematical formula. We will not discuss the details of this formula here. This will be done in a subsequent publication (Gunn and Mahula 1977). We will, however, attempt to show the effect of its use.

The curved lines in Figure 2, b, c, d, show the Sollberger distributions with the effect of simultaneous propagation removed. These distributions conform in general to the theory. In order to test the simultaneous propagation aspect of the model, the experiment would have to be run again. Instead of collecting flakes after each phase, a collection would have to be made after each blow to determine what the empirical characteristics of simultaneous propagation are.

Finally, we will attempt to apply the Sollberger distribution to archaeological analysis. As was noted earlier, we hoped to refine our ability to define site function by determining exactly what kind of stone knapping was being done at a site. During the 1976 summer field season the UTSA Field School excavated a portion of the Hop Hill site (41 GL 127) in LBJ State Park near Stonewall, Texas. J. David Ing of Texas Parks and Wildlife suggested to us previous to the excavation that the locality was a multifunctional site with village, midden and quarry areas. We excavated

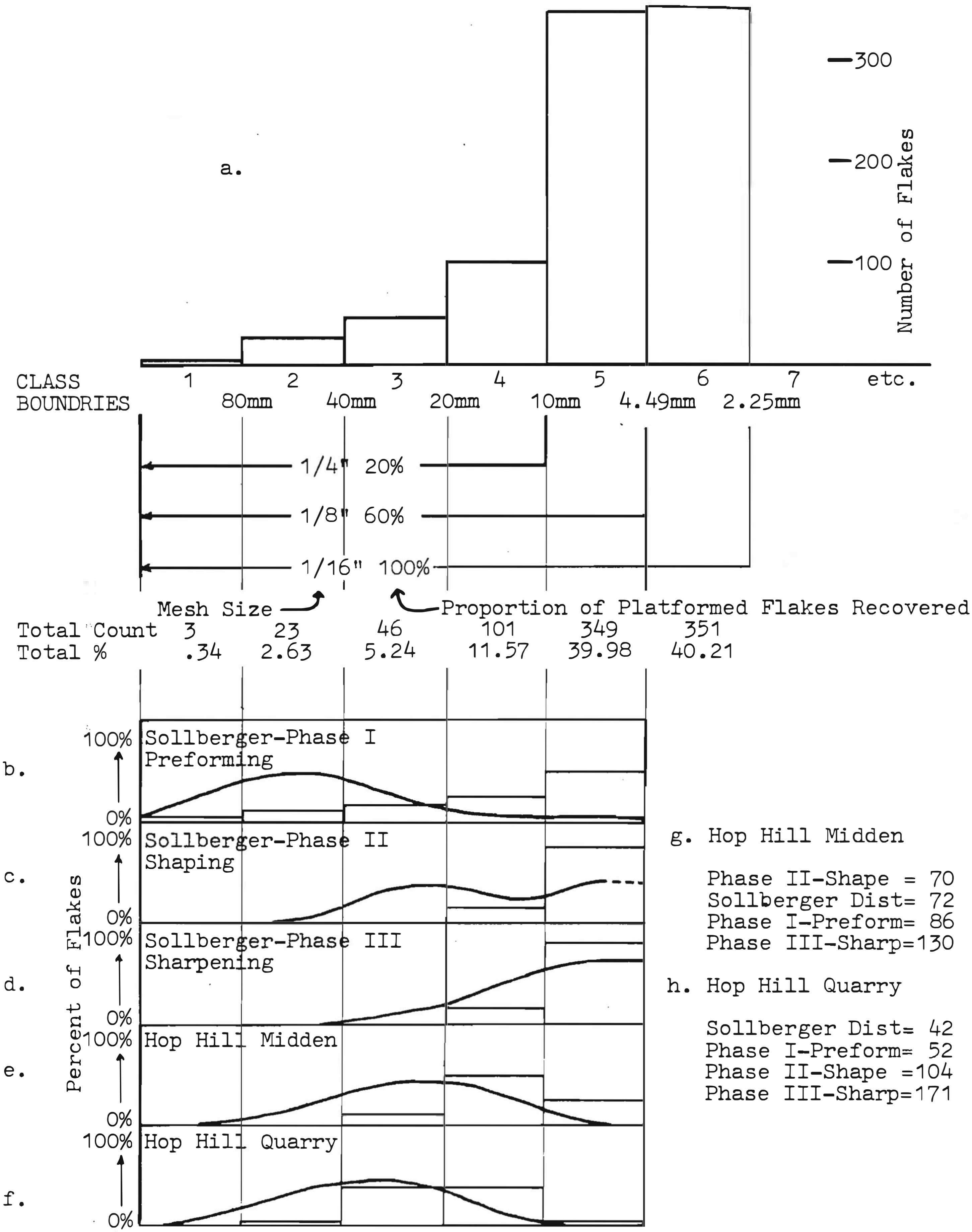

Figure 2. a. Overall Sollberger Distribution and recover by mesh size, b-f. untransformed(bar graph) and transformed(curve) Phase and site Dist. g-h. indexes.

in the proposed midden and quarry areas. The Sollberger Distributions could be used to test Ing's hypothesis.

This was done by converting the exponentially transformed number of flakes from each size class to percentages and subtracting the midden and quarry distributions from the various phases of the Sollberger Distribution. These differences were then summed to give an index of similarity between phases and areas. The results of these calculations are shown in Figure 2, g, h. The index of similarity is to the right. The smaller it is, the more similar the area is to a phase of the Sollberger Distributions. Inspection of the curved lines will confirm the validity of the figures.

The comparisons show that the midden is most like Sollberger's Phase II - Shaping, while the quarry is most like Sollberger's overall distribution and Phase I - Preforming. Thus, the quarry area was the location of preforming and some general, all-around knapping. In the midden, which is located on the hill above the quarry, preforms were apparently shaped into tools as is suggested by the strong relationship to Phase II - Shaping. Thus, the evidence drawn from a replicative experiment supports the hypothesized functions for the two areas of Hop Hill. More could be learned from a more detailed examination of the relationships in Figure 2, g, h, by statistical treatment of the analysis. We hope that the work presented here will serve to demonstrate the basic utility of the Sollberger Distribution.

Bibliography

Katz, Paul R. (1976). A Technological Analysis of the Kansas City Hopewell Chipped Stone Industry. PhD Dissertation, University of Kansas.

Gunn, Joel and Royce Mahula (1977). The Hop Hill Locality; An Enviro-Cultural System in Central Texas. Reports of the Center for Archaeological Research, University of Texas at San Antonio. (Publication in 1977).

[1] The biface was knapped from a chert nodule approximately 7" x 4" x 2".

FLOTATION RECOVERY TECHNIQUES DURING ARCHAEOLOGICAL EXCAVATION

J. A. Jaquier

Abstract

Today's conventional archaeological techniques bias the prehistoric subsistence evidence in favor of larger game animals and tend to minimize the role of plant foods. Although it is usually postulated that exposure to the elements mitigates against the recovery of most plant remains, it is suggested in this paper that the answer lies not in preservation but in recovery technique.

This article, designed primarily for the amateur, discusses the basic field equipment, procedures and problematical considerations in performing flotation, the separation in a liquid of small-scale floral and faunal remains. The data derived from analysis of flotation material are extremely useful in reconstructing prehistoric ecosystem exploitation and diet patterns. Inferences about the seasonality of site occupation may be drawn from this analysis and a better understanding of the transition from hunter-gatherer to a more sedentary agricultural lifeway may evolve.

Introduction

Have you ever wondered what is being lost or ignored due to current screening practices at archaeological excavations? Perhaps you have spent long hours in the laboratory tediously separating a soil sample and have wished for an easier procedure. In either case, the technique described in the ensuing paragraphs may prove useful to the amateur and the professional alike.

Flotation is the separation in a liquid of small-scale archaeological remains into a heavy fraction which sinks and a light fraction which floats or is temporarily suspended when the liquid is agitated. Water is the common medium for performing flotation in the field while several chemicals, primarily zinc chloride, are used in the laboratory. The technique of flotation, common in industry, is not new to archaeology either. An Austrian botanist named Unger is reportedly the first to practice archaeological flotation to separate grain and other seeds from ancient Egyptian adobe bricks circa 1860 (Watson 1976: 78). Today, archaeological flotation is being practiced around the world with increasing frequency in an effort to recover and document prehistoric subsistence patterns.

During excavation of the Timmeron Rockshelter site (41 HY 95) in early 1975, members of the Southern Texas Archaeological Association under the direction of Dr. Thomas R. Hester of the University of Texas at San

Antonio, encountered a cultural feature with concentrations of ash and fiber matting. Since flotation was being practiced during the course of the excavation, the writer was able to observe what significant cultural material was being missed by the routine 1/4" screening process and, in fact, what important subsistence indicators are often ignored even when the screen mesh is much smaller. Large quantities of very small bone, chert and charred plant remains were "floated" from the matrix samples provided by the digging crews. Interestingly, an absolutely perfect and very finely worked thin projectile point only one centimeter long was also recovered during the process (Smith 1975: 9) and would otherwise have escaped detection since the matrix in which it was found had already been screened.

Description of Technique

This discussion of flotation technique is divided into three basic aspects: the equipment used, the specific procedures practiced during flotation in the field, and a consideration of some of the problems encountered.

Equipment. A high-sided frame (either wooden or metal, such as a washtub) should be fitted with heavy-duty 1/16" (1.6mm) metal screen mesh on the bottom. The frame (Figure 1) should be approximately two feet across with reinforced handles and should have thin metal cross-braces or 1/4" screen supporting the finer mesh from the bottom side.

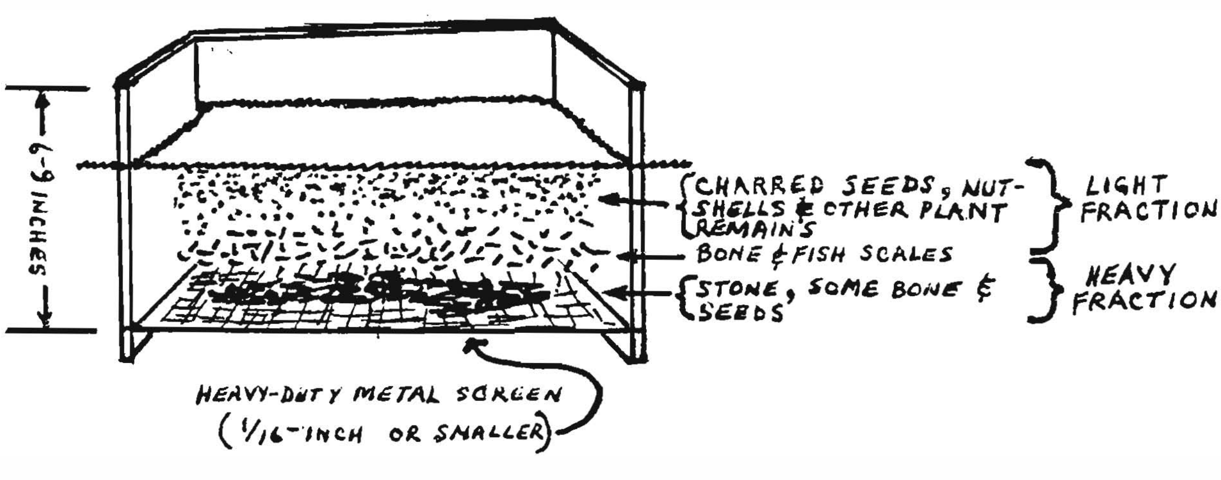

Figure 1. Representation of flotation screening frame showing light and heavy fractions separated during flotation process.

A small mesh strainer (Figure 2) with a metal frame shaped roughly like a stirrup will also be required. The peculiar shape allows scooping of the light fraction from square corners and parallel to the bottom of the screen without disturbing the heavy fraction. The mesh for this strainer must be sufficiently small (less than .5mm) to recover minute particles from the surface or just below the surface of the water. A number 100 mesh screen (100 squares to the linear inch) or smaller is recommended for this key piece of equipment.

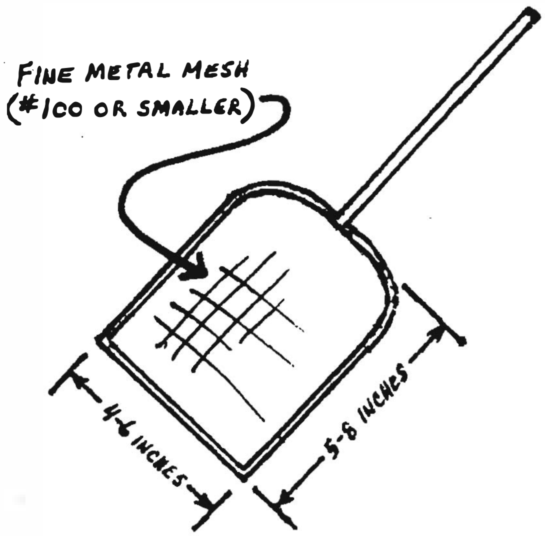

Figure 2. Diagram of fine mesh strainer for recovery of light fraction during flotation process.

Additional field equipment includes a supply of newspaper, plastic bags or snap-top vials, tags and a waterproof marker. A strong back, keen eyes and a full measure of patience, while not absolutely necessary, cannot help but make the job easier. While the equipment recommended above is designed for use in the field at the site, the laboratory equipment for further flotation separation is equally simple and is described fully in an excellent monograph by Stuart Struever (1968: 353-62).

Procedures. Place the screen in the water and flood approximately half full. Pour one sample of soil (roughly equivalent to the quantity contained in one number 12 pail) onto the flooded screen. Gently agitate the screen or stir the soil sample to separate the material and precipitate the unwanted sediment through the bottom of the screen. Care must be taken neither to completely submerge the screen (thereby losing a portion of the smallest organic matter as it floats out of the screen) nor to raise the bottom of the screen from the water (thereby washing organic material out through the bottom). When all the sediment has been washed away, scoop the floating light fraction off the top of the water with the fine mesh strainer, taking care to also retrieve the material swirling in temporary suspension below the surface. Tap the light fraction from the fine mesh strainer onto a thick pad of newspaper which has been labeled for identification and allow the fraction to dry. Next tilt the flotation screen still in the water to wash the heavy fraction to one corner. After removing the screen from the water, knock the heavy fraction out onto another thick pad of labeled newspaper and allow this material to dry also. Time will probably not permit a close examination and further manual separation of the light and heavy fractions, therefore these dried specimens should be placed in previously marked and tagged plastic bags or vials. Field flotation in water represents only the preliminary separation and processing step. The secondary processing step, using chemical flotation, easily separates the food residue in each fraction into isolated classes. Specialists in the laboratory can then proceed rapidly and simultaneously with identification since there is no laborious sorting through a bulky mass of cultural remains.

A word of caution is in order. Before beginning flotation on the next soil sample, which may very well be from a distant part of the site and represents a completely different level and temporal period, clean off the screen and the strainer by immersing them in clean water lest subsequent specimens become contaminated.

Problems. There is no question that the primary consideration will be the source of water; it drives the flotation method. A clear, slow-moving, knee-deep stream is ideal, but a lake or even a hose and 55-gallon drum are still feasible. Avoid salt water, however, since a sodium chloride coating of the fractions will cause undue problems in the laboratory. If there is no water available, it is still possible to perform the entire flotation process in the laboratory in a sink equipped with a drain sufficient to carry away soil or in the back yard of a home in a large container. The physical labor, transportation and storage space required by a large bulk of soil (often several cubic yards) may make this method prohibitive, however.

The second problem which must be faced is a well-defined sampling program for the entire site. If reliable subsistence patterns are to be derived, all areas of the site must be methodically sampled. An adequate sampling procedure must also deal with each level or cultural feature as digging progresses. As a basic plan of attack, consider the following suggestion. Take a soil sample of a minimum of one pail from the same quadrant at each level in alternating squares (a checkerboard pattern). The sample from each square should be taken from the same quadrant each time in order to provide a vertical column of material for stratigraphic distribution analysis. Since flotation is an adjunct to, and not a replacement for, taking a physical soil sample, continue to record and bag a small specimen of the various soil types noted for subsequent laboratory examination.

Perhaps the most difficult problem of all concerns proper accounting and recording procedures. Everyone has heard the expression "Let 'em figure it out in the lab" while out on a dig. Anyone who has worked both sides of the problem will readily attest to the fact that the most difficult aspect of "figuring it out" is incomplete and inaccurate records. The exact sampling program, the size of the flotation screen mesh and the strainer mesh, how the sample was treated before and after floating, the general appearance of the fractions and what specific technique was used for separation, are a few of the items that must be accurately recorded in field flotation notes. If any cultural feature receives a heavier degree of sampling than was originally planned, be sure to note this fact so that distributional percentages may be adjusted.

Generally speaking, the least of considerations, but still a factor to be reckoned with, may be expressed in terms of manpower and time. A team of four people is optimum for performing basic flotation in the field. The first person should obtain pails of soil from the various squares being worked and return the empty pails back to the diggers (Note: This calls for more pails than normally used at an excavation). He should also screen the soil sample through a 1/4" mesh, if this has not already been done. Since excessive abrasion will damage the small-scale remains, it is perhaps best if this preliminary screening is performed separately by a member of the flotation crew. The second and third members of the team should perform the actual flotation with one person gently agitating the screen and the second periodically removing the light fraction with the fine mesh strainer. The fourth member of the team acts as recorder and general factotum, labeling the newspaper drying pads, marking the storage bags or vials and placing the dried specimens in them, conducting preliminary observations of the light and heavy fractions, and carefully noting the specific procedures being followed during the course of the excavation.

Although 1/16" metal screen was suggested earlier for the bottom of a general purpose flotation screening frame, it is recognized that the finest mesh that will permit the soil particles to escape downward should be used. Sandy soils require the largest mesh; ash and fine silt dictate a smaller mesh equivalent to approximately a number 60 size. Since too small a mesh for a particular soil causes the screen to clog and contaminates both the light and heavy fractions with sediment, the more adequate equipment inventory for field flotation will consist of two screening frames with different size mesh.

Simple hand flotation has been described. The shade-tree mechanic can, with but a little ingenuity, devise more sophisticated mechanically-assisted systems more conserving of water where the light fraction is driven near the surface, surges over a spillway and is collected in a fine mesh catch basin while the heavy fraction settles on an insert screen.

Summary

A quote attributed to Hole, Flannery, and Neely in Watson's article (1976: 87) adds perspective to the application of flotation techniques as a vital part of archaeological excavations:

> "... our preliminary report... states confidently that 'plant and animal remains were scarce at Ali Kosh'... Nothing could be farther from the truth. The mound is filled with seeds from top to bottom; all that was 'scarce' in 1961 was our ability to find them, and when we had added the 'flotation' technique... in 1963 we recovered a stratified series of samples totaling over 40,000 seeds."

The results which may be obtained through flotation are also rather graphically demonstrated by Struever (1968: 358) from his work at the Apple Creek site in the lower Illinois River Valley:

> "The soil containing materials had already been processed through screens on the site, and more than 90 per cent of the plant materials had escaped. Over 40,000 charred nutshell fragments, 2,000 carbonized seeds, and some 15,000 identifiable fish bones were collected by water-separation.
>
> Interpretation of Middle and Late Woodland subsistence activities at Apple Creek would be quite different had we not used water-separation to recover food debris too small to be collected with conventional screens, but nevertheless preserved there."

Flotation represents the development of an efficient and inexpensive technique to process large quantities of soil and recover most of the smaller food remains. Until flotation becomes an accepted practice at most, if not all, archaeological excavations and fundamental field flotation procedures are standardized, comparison between sites of both the kinds of food species exploited and their relative importance will often be difficult and incomplete.

Acknowledgments

I especially wish to thank Dr. T. R. Hester of the University of Texas at San Antonio for "volunteering" me to perform flotation at the Timmeron Rockshelter site, thus stimulating my interest and research in this area. For his obvious interest in the procedure, his timely suggestions, and his encouragement, I am most grateful. I also wish to express gratitude to Shirley Van der Veer for having the confidence to ask me to present a lecture-demonstration on flotation techniques during an STAA laboratory session subsequent to the last quarterly meeting, thus giving impetus to this paper. I am also indebted to Anne A. Fox for her helpful suggestions and questions during that lecture-demonstration, for bringing the Struever article to my attention and loaning it to me, and for her assistance in editing this paper into a reasonable facsimile of coherence.

Finally, I wish to acknowledge the patience, understanding and help of Cherry Jaquier as she stood knee-deep for endless hours in the chilling water of Timmeron's Lone Man Creek in mid-winter working by my side.

Bibliography

Smith, Harvey P., Jr. (1975). Dig That Square: A Lesson from Timmeron Rockshelter (41 HY 95). Southern Texas Archaeological Association Newsletter, Vol. 2, No. 4, pp. 9-10. San Antonio.

Struever, Stuart (1968). Flotation Techniques for the Recovery of Small-scale Archaeological Remains. American Antiquity, Vol. 33, No. 3, pp. 353-62. Salt Lake City.

Watson, Patty Jo (1976). In Pursuit of Prehistoric Subsistence: A Comparative Account of Some Contemporary Flotation Techniques. Mid-Continental Journal of Archaeology, Vol. 1, No. 1, pp. 77-100.

AN ALIBATES DOLOMITE SCRAPER FROM WILSON COUNTY, TEXAS

Jimmy L. Mitchell

This report documents a large unifacial scraper made of classic Alibates dolomite which was found near the town of Sayers, in Wilson County, Texas. The artifact is part of the E. R. Bly collection. Mr. Bly lives south of San Antonio, in rural Bexar County; other artifacts from his collection have been reported previously (Mitchell 1974).

The large unifacial scraper, shown in Figure 1, is gray-white in color with dark red stripes. This distinctive coloration is quite typical of the material found in the Alibates quarry, which is located in the central Texas Panhandle on the Canadian River near Fritch, Texas (Bryan 1950, Weehler 1974, Anonymous 1975). This specimen is approximately 160 mm long and has a maximum width of about 62 or 63 mm. Maximum thickness is 18 mm. It is made on a single percussion flake and the bulb and platform are still evident at its smaller end. Some of the outer cortex of the rock is still present on the back of the specimen giving it a rather unfinished look. However, the fairly well worked edges suggest that it is a finished tool.

Very few artifacts made of Alibates material have been reported from South Texas. Hester (1972) has published a brief note concerning a small snub-nosed end-scraper from 41 DM 14 in southwest Dimmit County. He observed that the site lies approximately 535 miles south of the Alibates quarry and suggests that the specimen is one of the many intrusive artifacts (such as Southwestern pottery, Huastecan figurines, etc.) indicative of extensive trade relationships between South Texas groups and peoples in various other areas.

O'Brien (1971) has illustrated a large (120mm long, 25mm wide) unstemmed biface from the Fullen Site, 41 HR 82, a small coastal shell midden south of Houston. He reports that the specimen "is a gray banded flint with deep red and white stripes and speckles in it; similar to flint found at the Alibates quarry in the Texas Panhandle (page 350)." The biface is of a lanceolate form but is not a Paleo-Indian artifact. It was found four inches below the surface; other materials found in the 0 to 6 inch level included three Perdiz points and a fair amount of bison bone. Scallorn points were found at a lower level (10 inches).

Alibates artifacts have been reported in a number of contexts in the intervening area between the Alibates quarry and Southern Texas, where the present artifact was recovered. Wedel (1975) has reported Alibates material in Woodland (A. D. 400 to 850) and Late Archaic (400 to 1650 B. C.)

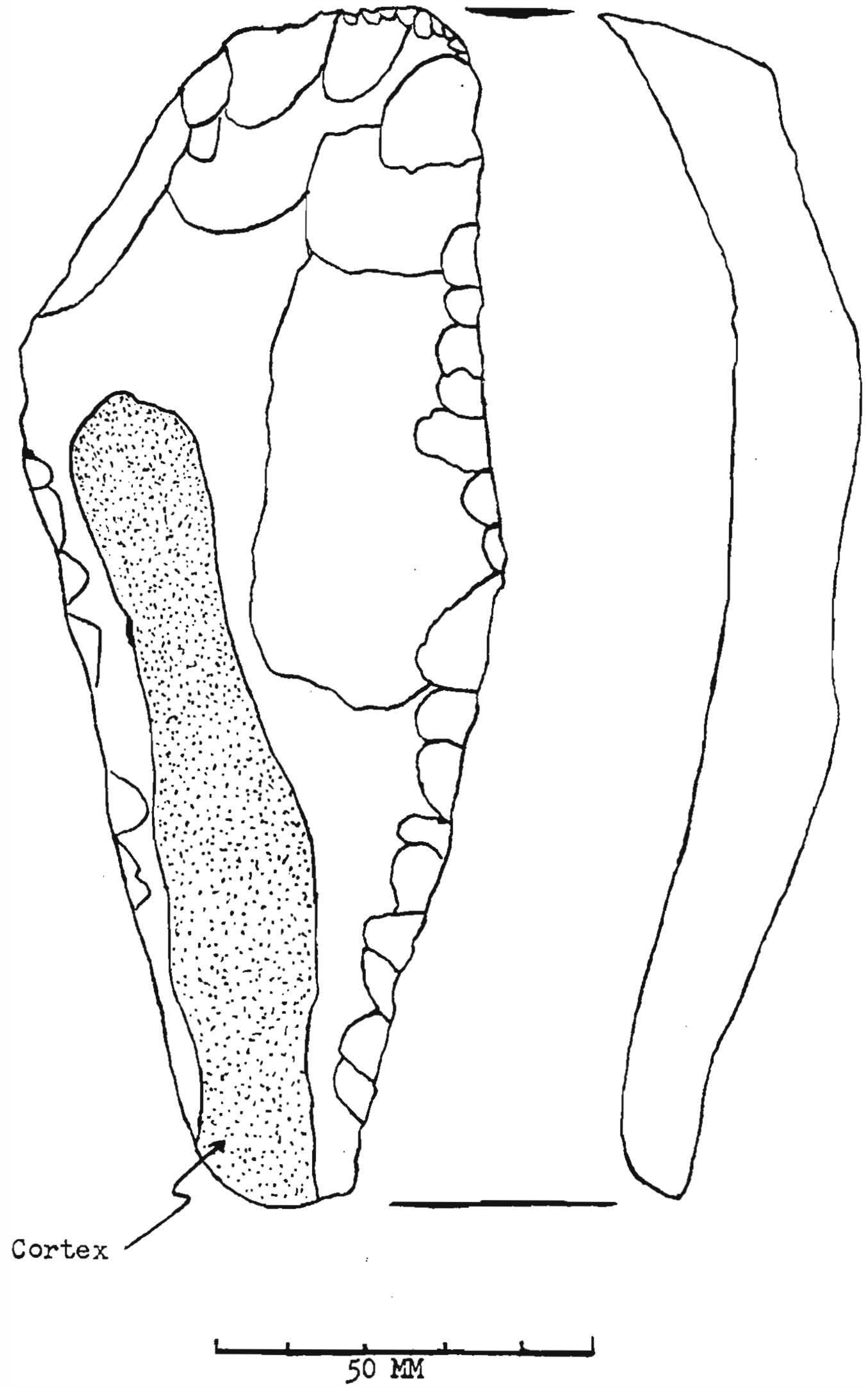

Figure 1. Unifacial scraper of Alibates dolomite from Wilson County, Southern Texas. (Illustration adapted from field sketch by Dr. T. R. Hester)

levels at Chalk Hollow in Randall County, Texas. These levels also produced artifacts of Edwards Plateau chert which suggests that trade existed between the Panhandle and Central Texas over a considerable span of time. Skinner (1975) also reports a considerable amount of Alibates material in the Floydada Country Club sites on the White River in Floyd County, Texas, along with Central Texas flint and chert, as well as local materials. These sites are apparently of the Late Prehistoric period and also contain trade ceramics from both East Texas and the Pueblo area to the West.

Alibates artifacts have also been observed at Paint Rock on the Concho River, at the margin of what might be called Southern Texas. During the return trip from the 1973 Texas Archeological Society meeting in Lubbock, Dr. Hester, of UTSA, and I visited the sites at Paint Rock and were also shown the collection of artifacts found on these sites. Included were projectile points and beveled knives made of Alibates dolomite. This interesting and important collection has not been systematically studied or reported, but it certainly should be.

Perhaps the greatest use of Alibates dolomite was made during the Panhandle Aspect (A. D. 1200 to 1450), a Plains Village people who practiced agriculture and had permanent villages centered on the Canadian River in the Texas and Oklahoma Panhandles (Anonymous 1975). One of the most diagnostic artifacts of this cultural complex was the alternately beveled knife, a diamond shaped artifact which was frequently made of Alibates material. Poteet (1938) reported such knives from a number of South Texas counties; these include: Val Verde, Kinney, Uvalde, Kerr, Hays, Travis, Bastrop, Fayette, Colorado, and Calhoun Counties.

Sollberger (1971) believes, based on his technological study of such knives, that they were developed rather late and were an innovation of people who were exploiting the buffalo. Weehler (1974) also reports that at Pecos Pueblo in New Mexico, artifacts made of Alibates dolomite were of types normally associated with hunting, skinning, and butchering activities, which suggests that the users of these artifacts were active in the bison areas of the Llano Estacado of Texas. She also has studied the trade relationships of the Southern Plains based on the dispersal of Alibates material. She reports that Alibates artifacts are found over many parts of Texas, Oklahoma, Kansas, Colorado, and New Mexico (as are Southwest trade ceramics and pieces of obsidian).

The suggestion that Alibates artifacts were dispersed by bison hunters is in no way contradicted by the specimens of Alibates dolomite which have been found in South Texas. The main migration of bison into South Texas is thought to have occurred around A. D. 1300. Dillehay (1974) in his study of bison population movements on the Southern Plains suggests a major influx at about this time. After this time, bison are found in archeological sites over much of the area, including the area near Houston (the San Jacinto

River Basin of Montgomery County, Texas). Recently, Hester (1975) has noted that bison were also present as far south as Alice in deep south Texas, 120 miles south of San Antonio. Apparently, some bison herds were still present in the area into historic times.

The use of Alibates material for trading also continued well into the historic period. Sudbury (1976) has recently reported on the Deer Creek site in north-central Oklahoma (on the Arkansas River), an eighteenth century French contact site which is said to have been occupied between A. D. 1730 and 1760. Fresno arrowpoints (and other artifacts) of Alibates dolomite were recovered at Deer Creek, as were artifacts of Edwards Plateau (brown) chert. Triangular metal arrowpoints were also found at the site and are thought to have eventually replaced stone projectile points.

There are few real clues as to the date of the South Texas Alibates scraper reported here or other Alibates artifacts found in the area. As noted earlier, Wedel (1975) reported Alibates and Central Texas chert artifacts from late Archaic and Panhandle Woodland contexts. The greatest use of Alibates material occurred during the Panhandle Aspect (A. D. 1200 to 1450) where alternately beveled knives were developed for use in processing bison kills. And bison were increasingly present on the Southern Plains and even on the coast and into far southern Texas in the post A. D. 1300 period; that is, in the Late Prehistoric. Alibates artifacts continued in use as late as A. D. 1760 at the Deer Creek site in Oklahoma, until replaced by metal points made from European metals.

We can see that Alibates dolomite was used over a considerable span of time and was traded over a very wide area (encompassing at least five states). It should not be surprising, then, to find artifacts of such material in South Texas.

It is not possible to specify an actual date for the Alibates artifacts in this area. However, since the artifacts which have been reported so far are typical of bison exploitation, it is possible to suggest that they may date from the Late Prehistoric (post A. D. 1300) period.

Bibliography

Anonymous (1975). Alibates Flint Quarries. National Park Service, U. S. Department of the Interior.

Bryan, Kirk (1950). Flint Quarries -- The Sources of Tools and, at the Same Time, the Factories of the American Indian. Papers of the Peabody Museum, Harvard University, Vol. XVII, No. 3.

Dillehay, Tom D. (1974). Late Quaternary Bison Population Changes on the Southern Plains. Plains Anthropologist, Vol. 19 (65): 180-196.

Hester, Thomas R. (1972). An Artifact of Alibates Dolomite From the Rio Grande Plain. Texas Journal of Science, Vol. 24, No. 1: 99-101.

__________ (1975). Late Prehistoric Cultural Patterns Along the Lower Rio Grande of Texas. Bulletin of the Texas Archeological Society, Vol. 46: 107-125.

Mitchell, James L. (1974). Notes on Metal Projectile Points From Southern Texas. The Journal of South Texas, Vol. 1: 47-51.

O'Brien, Michael (1971). The Fullen Site, 41 HR 82. Bulletin of the Texas Archeological Society, Vol. 42: 335-365.

Poteet, Sybil (1938). The Occurrence and Distribution of Beveled Knives. Texas Archeological and Paleontological Society Bulletin, Vol. 10.

Skinner, S. A. (1975). Archeologist's Report, Texas Archeology, Vol. 19, No. 3: 6-7.

Sollberger, J. B. (1971). A Technological Study of Beveled Knives. Plains Anthropologist, Vol. 16 (53): 209-218.

Sudbury, Bryon (1976). Ka-3, The Deer Creek Site. Bulletin of the Oklahoma Anthropological Society, Vol. 24 (for 1975): 1-135.

Wedel, Waldo R. (1975). Chalk Hollow: Culture Sequence and Chronology in the Texas Panhandle. Actas del XLI Congreso Internacional de Americanistas. Vol. 1, Mexico City.

Weehler, Karen (1974). Trade Theories Concerning the People of the Antelope Creek Focus as Indicated by the Dispersal of Alibates Flint. Lower Plains Archeological Society Bulletin Number 4: 1-5.

PRELIMINARY EXCAVATIONS AT THE RANDIG SITE, WILLIAMSON COUNTY, TEXAS

Roger L. Daniels

Abstract

Results of preliminary excavations at the Randig Site are presented. The location and setting of the site, methods of excavation, artifacts and skeletal material recovered are described. Evidence indicates that the site represents a burial site from the Austin phase of the Central Texas late prehistoric era. A brief summary of patterns found in other Austin phase burial sites from Central Texas is given. The disturbed nature of the Randig site materials makes detailed comparison with other sites impossible. Evidence is given that considerable material of importance may remain at the site, and further study is suggested.

Introduction

The Randig site is located in southern Williamson County, Texas, about one-half mile north of the Williamson-Travis County line, just north of Pflugerville (Figure 1). Exploratory excavations were done at the site on two Saturdays in the fall of 1968 by R. Dale Givens and students from Trinity University. The purpose of these excavations was to test the possibilities of this site for more extensive investigations.

The Randig site was named for Edmund Randig of Pflugerville, who was, at the time of the excavations, farming the land on which the site is located. Mr. Randig was also responsible for bringing the site to the attention of Professor Givens.

The site lies in an open field. The field is bordered on the south by a fence, immediately beyond which is a stock tank surrounded by an artificial dirt levee. To the west across the field the land rises gently into a small hill. To the north of the field is a cluster of trees surrounding a gully; this erosional feature forms the northern boundary of the field. About one-half mile north of the site is Brushy Creek, a small waterway at this point about 25 feet in width and having two to three feet of running water in it.

The site proper consists of two distinct raised mound-like areas in the middle of the slightly sloping field. The field has been entirely cleared for farming. However, at the time of the excavations there were no crops planted in the field.

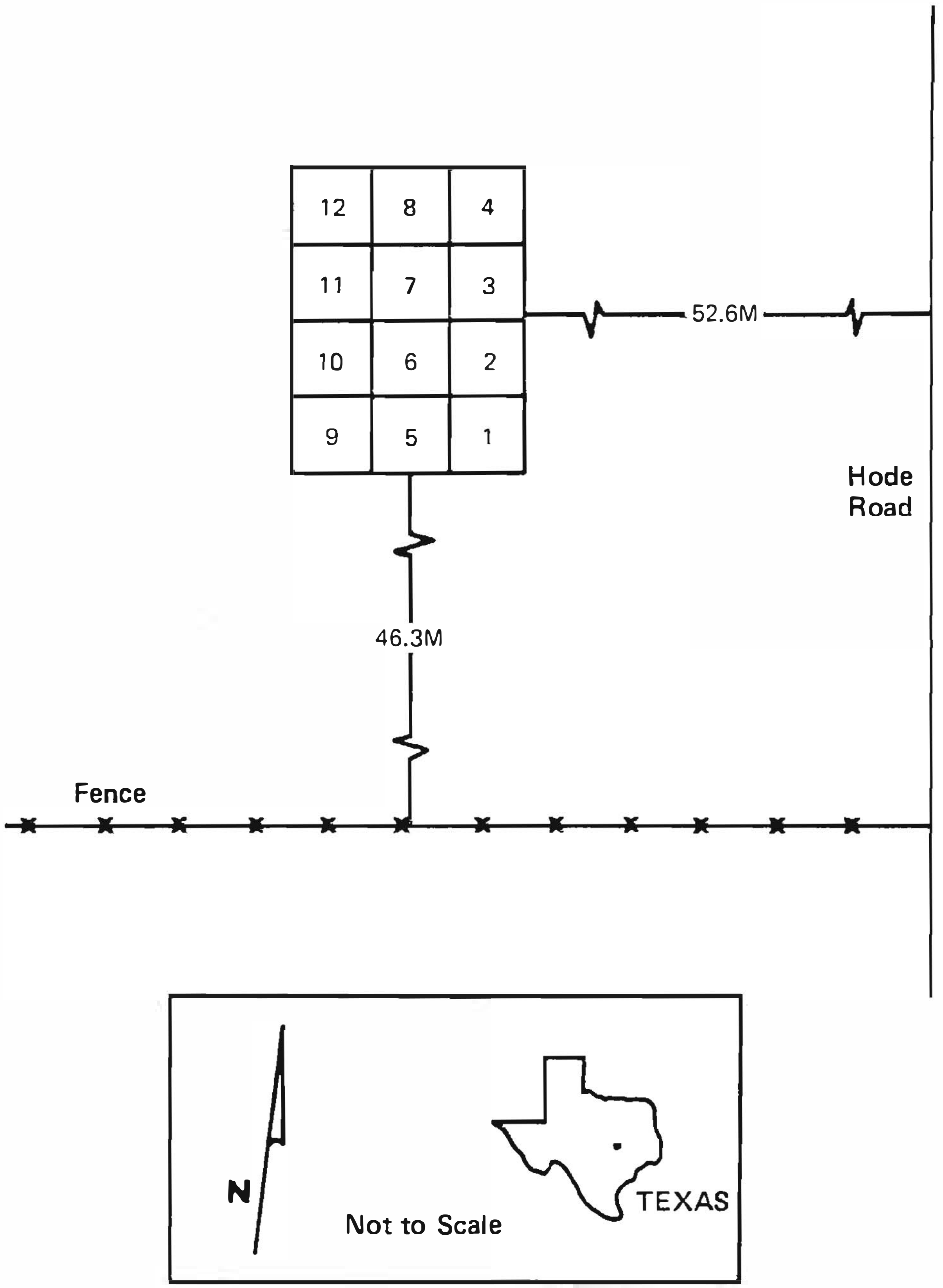

Figure 1. PLAN OF EXCAVATIONS AT THE RANDIG SITE. Inset shows location of site within state.

Excavations

An arbitrary grid system was superimposed on the smaller of the two raised areas. This grid system consisted of two-meter squares, beginning at a point 52.6 meters west of Hoad road and 46.3 meters north of the southern boundary fence. From this point the grid was extended for eight meters to the north and six meters to the west, resulting in twelve squares (Figure 1).

Due to the limited nature of the planned excavations, and the condition of the topsoil at the site (having been thoroughly plowed), no system of vertical control was developed. Time limited actual excavation to only seven of the twelve grid squares (2, 6, 7, 8, 10, 11 and 12) and to within six inches of the surface in these squares, all of which was totally within the plow zone. Even within these limits, a complete excavation of the first six inches of these seven squares was not completed in the two days of digging.

Results of the Excavations

The excavation resulted in the collection of 54 artifacts, a number of faunal remains, and a large number of human skeletal remains. For descriptive purposes, the artifacts are divided into lithic and bone artifacts. The reference for all typed projectile points is Suhm, Krieger and Jelks, 1954.

Lithic Artifacts

ARROW POINTS

Scallorn (Figure 2, a, one not illustrated)

Two points of the coryell variety. Both specimens have long, narrow triangular blades with straight lateral edges. The edges are finely serrated on one, and less so on the other. The stems expand strongly and the bases are slightly concave. Both points are missing portions of one barb, while the stem is fragmentary on one and the distal portion is missing on the other. One was found on the surface prior to excavation, the other in square two.

Dimensions: L: 2.2 - 2.9 cm W: 1.3 - 1.9 cm T: .4 cm

BIFACE DISTAL FRAGMENTS

Figure 2, b, c

Two biface distal fragments. One is probably from a triangular blade. It has a shiny pink and gray texture that might indicate heat treatment.

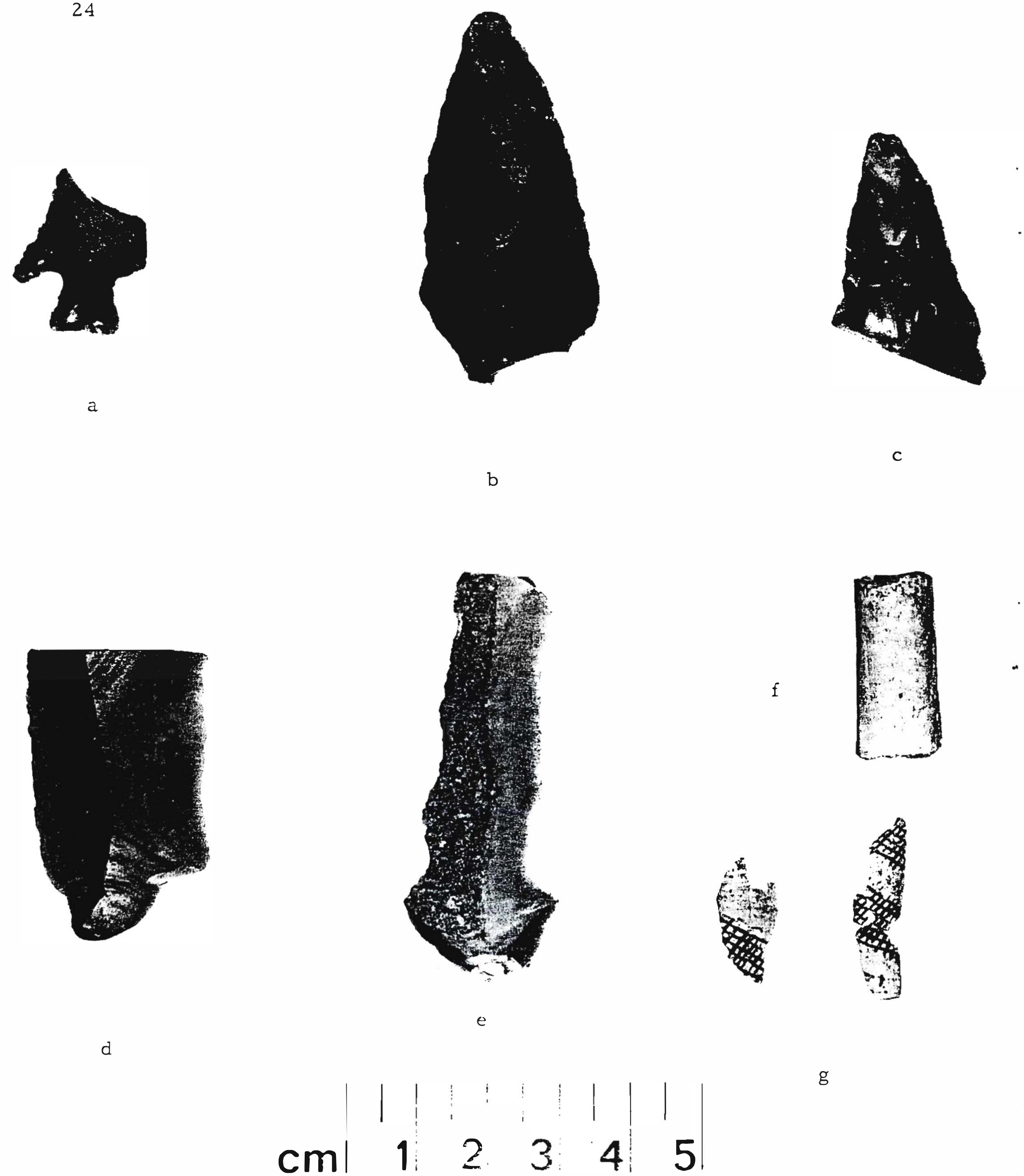

Figure 2. Artifacts from Randig Site. a, Scallorn arrow point; b, c, Biface distal fragments; d, e, Blades; f, Bead; g, Decorated bone.

The other has edges that are extremely rough with a trace of beveling. Both were found on the surface prior to excavation.

Dimensions: L: 3.7 - 5.1 cm W: 2.3 - 2.5 cm T: .6 - .9 cm

BLADES

Figure 2, d, e

The distal end of a plunging blade showing light trimming on one edge and a proximal blade fragment showing possible evidence of wear on both edges in the form of use-nicking. Figure 2, d was found in square 11, Figure 2, e in square 12.

Dimensions: L: 4.1 - 5.6 cm W: 2.1 - 2.4 cm T: .7 - 1.8 cm

FLAKE DEBRIS

A large quantity (44 specimens) of chert of varying size and shape appears to represent waste from the manufacture and use of other stone tools.

Bone Artifacts

BEADS

Figure 2, f

A short tubular bead made from an unidentified type of bone. The ends are irregular. The ends and body of the bead have been partially smoothed and polished. The bead was found in square 2.

Dimensions: L: 2.6 cm Maximum W: 1.1 cm Minimum W: .8 cm

DECORATED BONE

Figure 2, g

Three artifacts carved from an unidentified type of bone. The bones have bands of a criss-cross pattern cut in them. The three pieces appear to be parts of one larger piece. The bone is of a thin uniform thickness and has a glossy finish. These were found on the surface prior to excavation.

Skeletal Remains

HUMAN

The excavation yielded a large quantity of human skeletal material. A total of 1162 pieces of human bone was recovered. Unfortunately, very little information can be gathered from these due to their extremely fragmentary condition. It is obvious that the plowing of the field in which the site is located is the cause of the condition of the surface skeletal material.

Few complete bones could be reconstructed from the jumble of material. The skeletal remains of a number of individuals appear to be mixed together with no discernable pattern of interment. This is again probably the result of recent farming activity at the site. To give an idea of the fragmentary nature of the remains, not one complete long bone could be reconstructed out of the 1162 fragments recovered.

All fragments complete enough were identified as to the bone (or the portion of bone) they were from, and from the particular side. These data were tabulated to determine the minimum number of individuals present. It can be concluded that the remains represent at least seven different individuals. Of this number, at least two immature individuals are represented. Patterns of tooth wear indicate that a wide range of ages of adults were present.

One nearly complete cranium was reconstructed. It is the cranium of a young adult female. The skull is quite long and narrow. The maxillary incisors have shovel-shaped lingual surfaces. The only pathology observed in the remains was the arthritic lipping on one lumbar vertebrae.

The identification, aging and sexing of bones was done according to Bass, 1971.

ANIMAL BONE

A small collection of animal bones resulted from the excavation at the Randig site. All are well preserved, and further investigations utilizing more refined screening techniques would be assured of recovering a significant sample of faunal materials.

Billy Davidson (Austin, Texas) examined the faunal remains and made the following identifications: From the surface prior to excavation, cottontail rabbit, rattlesnake, watersnake (Natrix sp.), adult deer and a small rodent (cf. Neotoma). From square 2, a large ground bird (probably turkey). From square 11, two adult and one juvenile deer.

A number (13) of burnt bones, both human and non-human, were also recovered from various areas of the site.

Conclusions

The preliminary excavations of the Randig site raise far more questions than they answer. The site may have functioned primarily as a burial site during the Austin phase of the Central Texas late prehistoric era. The amount of human skeletal material certainly indicates that it is a burial site, and the Scallorn points and perhaps the bone ornaments are indicative of the Austin phase. The Austin phase is usually dated between 700 and 1200 years B.P. (cf. Prewitt 1974).

A number of Austin phase burial sites from the Central Texas area have been excavated, these are summarized by Prewitt (1974) and in Greer and Benfer (1975). Typical of these sites are flexed interments (either tightly or semi-flexed), arrow points in fatal association indicating agression in these groups, a scarcity of grave goods, and occasional evidence of contacts with coastal groups.

The lack of vertical control dictated by the disturbed nature of the surface at the Randig site precludes any conclusions about the type of these interments. One's first impression of the site might lead to the conclusion that it was a mass burial because of the jumbled condition of the material. Though rare, mass burials have been reported from Central Texas (Mernoney 1936). On the other hand, the impression of haphazard burial is probably the result of the recent farming in the area, rather than an indication of the original burial style.

Because of the lack of distinct burials at the site, nothing can be said about the association of arrow points or grave goods with them. The artifacts appeared to be randomly distributed among the skeletal remains.

The meaning of the burnt bone recovered in the excavations is also unknown. There is little evidence for cremation in Central Texas burial sites. The nature of these scattered burnt human and non-human bones would not seem to indicate purposeful cremation; they may just represent some later burning on the site.

Perhaps the most important conclusion drawn from the preliminary excavations at the Randig site is that it most certainly warrants further study. The surface of the site, though thoroughly disturbed, is rich in human skeletal material and associated cultural artifacts. Local residents of the area have several human skulls apparently removed from the site during earlier pothunting, and they claim that skeletal material extends to a depth of at least six feet below the surface. If this is the case, controlled excavations could uncover a wealth of new information pertinent to our knowledge of the physical and cultural traits of Central Texas late prehistoric populations.

Acknowledgments

I thank my former professor at Trinity University, Dr. R. Dale Givens, now at the Department of Anthropology, California State College, Dominguez

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Bibliography

Bass, William M. (1971). Human Osteology: A Laboratory and Field Manual of the Human Skeleton. Missouri Archaeological Society, Columbia, Missouri.

Greer, John W. and Robert A. Benfer (1975). Austin Phase Burials at the Pat Parker Site, Travis County, Texas. Bulletin of the Texas Archeological Society 46: 189-216.

Mernoney, W. P. (1936). A Mass Burial Near Waco. Bulletin Central Texas Archeological Society 2: 58-60.

Prewitt, Elton R. (1974). Archeological Investigations At the Loeve-Fox Site, Williamson County, Texas. Texas Archeological Survey, Research Report 49.

Suhm, Dee Ann, A. D. Krieger and E. B. Jelks (1954). An Introductory Handbook of Texas Archeology. Bulletin of the Texas Archeological Society 25.

ARCHAEOLOGY AT THE WELLS SITE (41 JK 146), JACKSON COUNTY, TEXAS

W. W. Birmingham, E. H. Schmiedlin and Thomas R. Hester

In February, 1974, W. W. Birmingham and E. H. Schmiedlin (Victoria, Texas) learned of archaeological materials that had been discovered along the Navidad River in Jackson County, Texas. The authors, along with John W. Craig, visited the site that same month. Test pits were excavated at the site and the landowner's collection was documented (see Table 1). This brief report summarizes the data obtained as a result of these limited investigations. For additional information on the archaeology of the Jackson County area, the reader should see Wakefield (1968) and Mallouf, Fox and Briggs (1973).

The Wells site (41 JK 146) is located on the Herman Wells farm, about 8.5 miles north-northwest of the town of Edna in northern Jackson County. The site is situated on the edge of an eroded low terrace, .25 miles west of the present Navidad River channel. Archaeological remains had been exposed through cultivation of the site area, erosion of the terrace edge, and during the course of a small sand-quarrying operation also on the edge of the terrace. In the site vicinity, much of the upland area has been cleared, although scattered oaks are still found. There is a riparian forest along the Navidad River channel.

While the authors were at the site, six one-meter square test pits were excavated. These revealed scattered lithic debris confined primarily to a sandy loam stratum overlying a gray clay, with a red clay formation at the bottom of the units. These soils are related to the Edna-Katy and Trinity-Kaufman series; the Wells site apparently lies near the boundary between these two soil series.

The upper unit, the sandy clay zone, was of varying thickness in the test pits, rarely exceeding one foot in depth below the surface. Although no in situ materials were found in the basal red clay, several specimens in the Wells collection (particularly the late Paleo-Indian forms shown in Figure 1, a, b, c, d) bore traces of red clay on their surfaces.

Lithic samples were obtained from four units. Most of the materials are derived from the sandy clay zone, within 8-12 inches of the surface. A listing of the recovered materials is found in Table 2. As can be seen in that table, the excavated collection includes a dart point, cores and core fragments made on cobbles, and a flake assemblage representing both the reduction of these cobbles and biface production. Lithic processing activities involved the use of small cobbles generally less than 10 cm in length. Both natural (cortex) and prepared platforms were used. Although

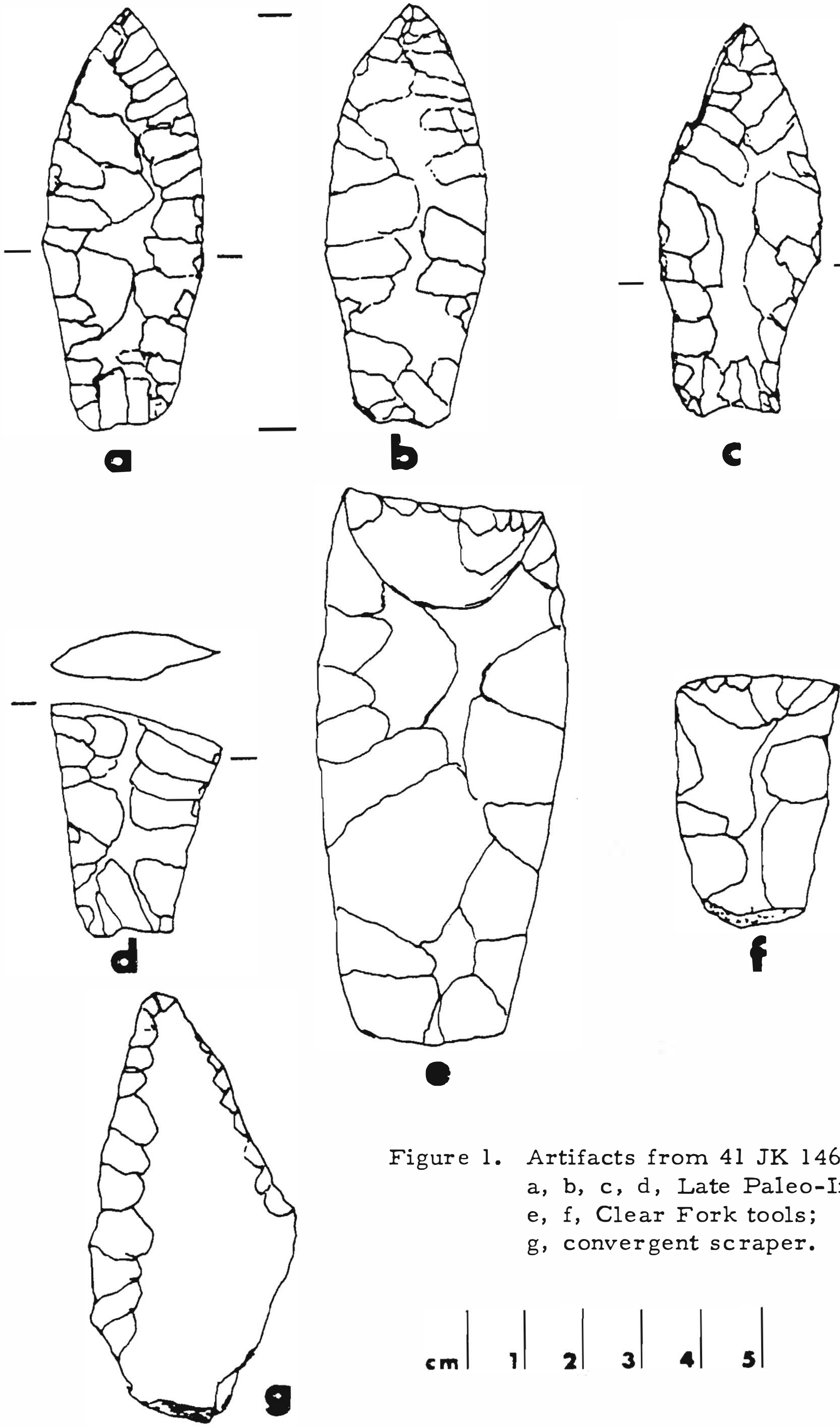

Figure 1. Artifacts from 41 JK 146.
a, b, c, d, Late Paleo-Indian points;
e, f, Clear Fork tools;
g, convergent scraper.

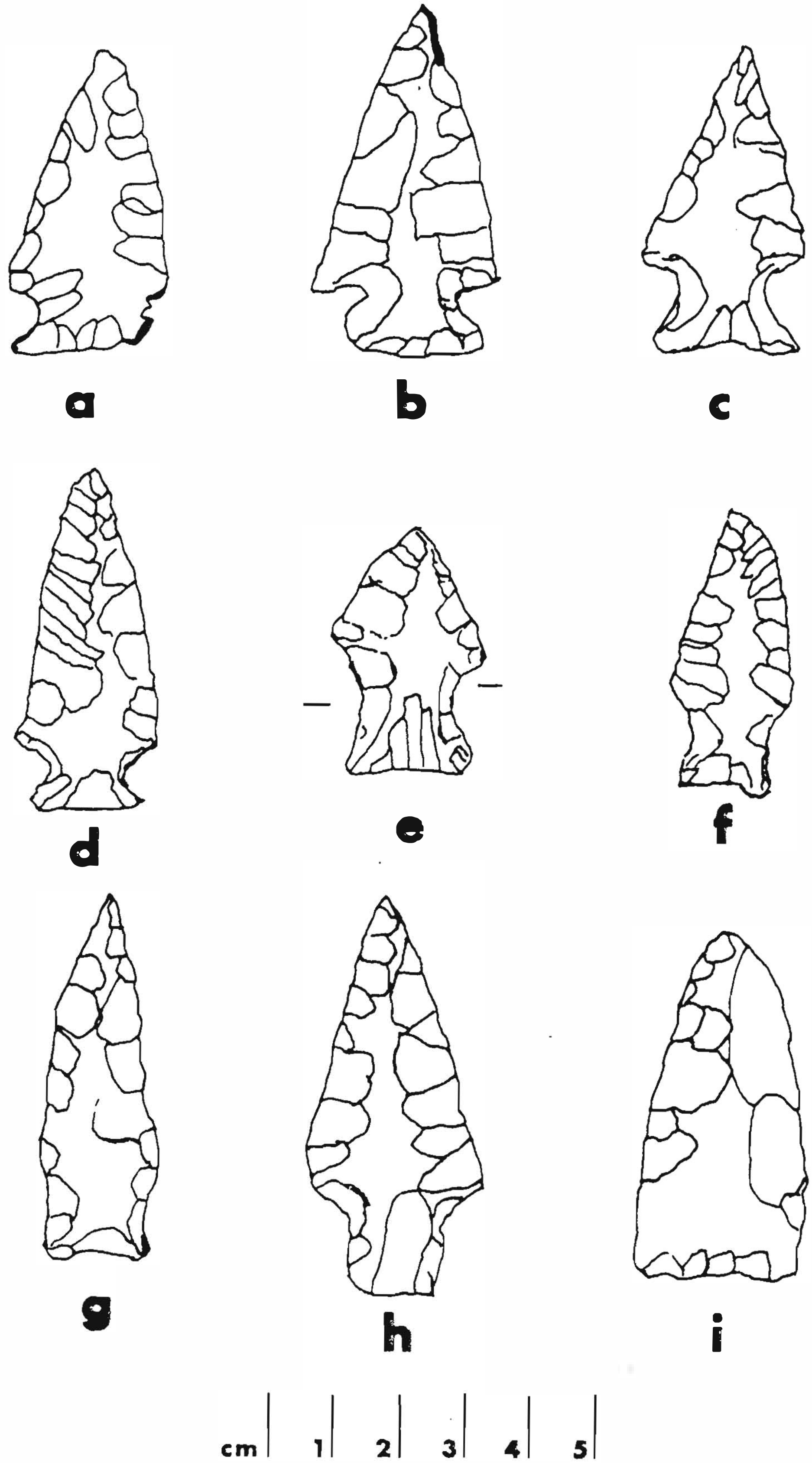

Figure 2. Artifacts from 41 JK 146. All dart points.

TABLE 1. ARTIFACTS FROM 41 JK 146: THE WELLS COLLECTION
(see Figures 1 and 2)

PROJECTILE POINTS

3 lanceolate dart points, resembling Angostura (One of these, Figure 1, a, b, is encrusted with red clay)
5 corner-notched dart points
1 dart point with shallow side notches
1 side-notched dart point with reworked tip
2 rectangular stemmed dart points
1 triangular dart point

OTHER BIFACES

3 "gouge"-like bifaces
1 large bifacial Clear Fork tool
1 small Clear Fork tool made on a pebble
5 preform fragments

UNIFACES

1 end scraper
1 small ovate scraper
1 convergent scraper

TABLE 2: LITHICS FROM TEST PITS AT 41 JK 146

	Test 2	Test 4	Test 5	Test 6	Total
stemmed dart points	1				1
primary cortex flakes	1		1		2
secondary cortex flakes	7		6	3	16
interior flakes	7	7	15		29
biface thinning flakes	3		7	2	12
cores and core fragments	2	1	1	1	5
end-modified cobble			1		1
chunks	3				3
TOTAL	24	8	31	6	69

the sample is a meager one, it would appear that most phases of lithic production went on within the site boundaries.

Concluding Comments

Test excavations and collection documentation at the Wells site (41 JK 146) produced information on late Paleo-Indian and Archaic occupations at the locality. The bulk of these data derive from the Wells family collection, since the limited test excavations failed to uncover substantial buried deposits.

The only previously recorded Paleo-Indian site in Jackson County is site 41 JK 50, also on the Navidad River drainage (Mallouf, Fox and Briggs 1973: 50). The early components at the site contain points resembling Plainview. However, there are also later occupations, continuing into late prehistoric times.

Perhaps of most significance is the series of Archaic projectile points from the Wells site. With the exception of Ensor, the other forms represented in the Wells assemblage are not reported from sites on the Navidad River drainage downstream (ibid). However, site 41 JK 66 has yielded a collection, in private hands, with artifacts similar to the Wells materials (Mallouf, Fox and Briggs 1973: Figure 51).

That part of Jackson County lying within the boundaries of the planned Palmetto Bend Reservoir has received much attention from professional archaeologists in the past few years (cf. Wakefield 1968; Mallouf, Fox and Briggs 1973), the most recent being that of Paul McGuff and William Fawcett of the Texas Archeological Survey. However, the "fringe" areas, in which the Wells site is situated, remain poorly known.

Bibliography

Mallouf, R. J., D. E. Fox, and A. K. Briggs (1973). An Assessment of the Cultural Resources of Palmetto Bend Reservoir, Jackson County, Texas. Texas Historical Commission and Texas Water Development Board, Archeological Survey Report 11.

Wakefield, W. H. (1968). Archeological Surveys of Palmetto Bend and Choke Canyon Reservoirs, Texas. Texas Archeological Salvage Project Survey Reports 4.