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THE SOUTHERN TEXAS ARCHAEOLOGICAL ASSOCIATION

The Southern Texas Archaeological Association brings together persons interested in the prehistory of south-central and southern Texas. The organization has several major objectives: To further communication among amateur and professional archaeologists working in the region; To develop a coordinated program of site survey and site documentation; To preserve the archaeological record of the region through a concerted effort to reach all persons interested in the prehistory of the region; To initiate problem-oriented research activities which will help us to better understand the prehistoric inhabitants of this area; To conduct emergency surveys or salvage archaeology where it is necessary because of imminent site destruction; To publish a quarterly journal, newsletters, and special publications to meet the needs of the membership; To assist those desiring to learn proper archaeological field and laboratory techniques; and To develop a library for members' use of all the published material dealing with southern Texas.

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Jimmy L. Mitchell
Journal Editor

La Tierra is published quarterly for members of the Southern Texas Archaeological Association. Single copies of past issues and special publications are available from the business office: STAA, 123 East Crestline, San Antonio, TX 78201.

Membership in STAA is open to all individuals who desire to assist in the study and preservation of the archaeology of south-central and southern Texas. For membership information, contact the Membership Chairman: Liz Smith, 1607 West Huisache, San Antonio, Texas 78201 (735-2306).

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EDITORIAL

NEW DIRECTIONS

Ned Harris and I were talking the other night on the phone about what STAA has accomplished in the five years it has been in existence. The organization started with a meeting in December of 1973 and T. C. Hill, Jr. put out the first issue of *La Tierra* in January 1974. It contained a membership list of 89 people. Today, we are an organization of more than 300 members plus a number of institutional subscribers. In these five years, we have engaged in archaeological research projects at the Alamo, Granburg II, St. Mary's Hall, the lime kilns north of San Antonio, the Governor's Palace, San Fernando Cathedral, the Timmeron Rockshelter in Hays County, the J-2 Ranch site in Victoria County, the Dan Baker site in Comal County, Camp Bullis, Baker Cave, 41 BX 300, Alamo Plaza, and have helped on a variety of other UTSA excavation projects. STAA now has its own library, its own trailer and excavation equipment, and is in the process of acquiring storage facilities for site materials. We've toured the missions, had the opportunity to visit the King Tut exhibit, and have presented at least eighteen quarterly meetings with as varied and interesting programs as possible (ranging from student papers to panel discussions, space photography in archaeology, historic pottery, to slide shows and movies of STAA projects).

We can be proud of our accomplishments in this first five years and can share a very good feeling about what we are doing. There was a need for our kind of organization in this region and STAA has gone a long way toward meeting the needs which existed at the time we got started. We are one of the most active groups in the state and have fully supported the state organization, the Texas Archeological Society. STAA members have served as TAS regional vice presidents, as editors, and one of our members has just been elected to be the TAS president for 1980. Anne Fox, who was our first secretary, later our chairman, *La Tierra* editor, project field director, author, and most recently TAS regional vice president, now serves as president-elect of TAS. Congratulations, Anne, and I trust that you will have the complete support and cooperation of every STAA member to keep the TAS one of the best (and probably the best) state archaeological organization.

We need to look forward to the next five years. What is it that we as an organization want to accomplish in the coming years? What does the membership want to see in *La Tierra*, in the newsletter, in special publications? What more can we do in terms of quarterly meetings and programs? Where are we going and what impact do we want to have?

As an individual, I know what I would like to see. I would like to see us grow in membership and in activities. I'd like to see more ranchers and farmers as members and I'd like to see data from some of our excavations in print; reports on the lime kilns and the Timmeron Rockshelter should be out this year. I'd like to see us do more for new members in terms of some kind of overview or training sessions. I'd like to see more of our experienced members visiting STAA members and potential members to look at collections and help people understand what they have. I'd like to see more people giving talks in the public schools to develop the interest of more young people in archaeology. And I'd like to see more people try their hand at writing about their sites, collections, and ideas.

The key issue here, however, is not what I want but is what YOU as an STAA member want. I urge you to make your desires known to the officers of the association and thus to have a voice in the future directions of our organization.

A SUMMARY OF RECENT SURVEY AND TESTING ACTIVITIES IN SOUTHERN BEXAR COUNTY, TEXAS

Fred Valdez, Jr.

During December, 1976, January and February, 1977, an archaeological survey of the areas designated for the San Antonio 201 Wastewater Treatment Project was carried out by personnel of the Center for Archaeological Research, The University of Texas at San Antonio. This work was done under contract with the City of San Antonio (Fox 1977). An extension of the project was completed in May, 1978. I will focus in this report on the results of investigations in the southern portions of the city. Ten sites were recorded, and one, the Confluence site (41 BX 124), was tested. Figure 1 shows the survey and testing areas.

ARCHAEOLOGICAL BACKGROUND

Southern Bexar County is little understood archaeologically. Woolford (1935) and Fawcett (1972) had attempted brief, general summaries of Bexar County archaeology, but still leave many unanswered questions in terms of the southern areas. McGraw (1977) surveyed areas along Medio Creek in southwest Bexar County and located 15 sites, representing one of a few professionally-handled surveys.

Fox (1977) and Fox, McGraw and Valdez (1978) provide much of the data used in preparing this paper. These reports are fairly generalized in terms of information concerning the study area. Further investigations are essential to better determine the culture history as it relates to other areas.

NATURAL SETTING

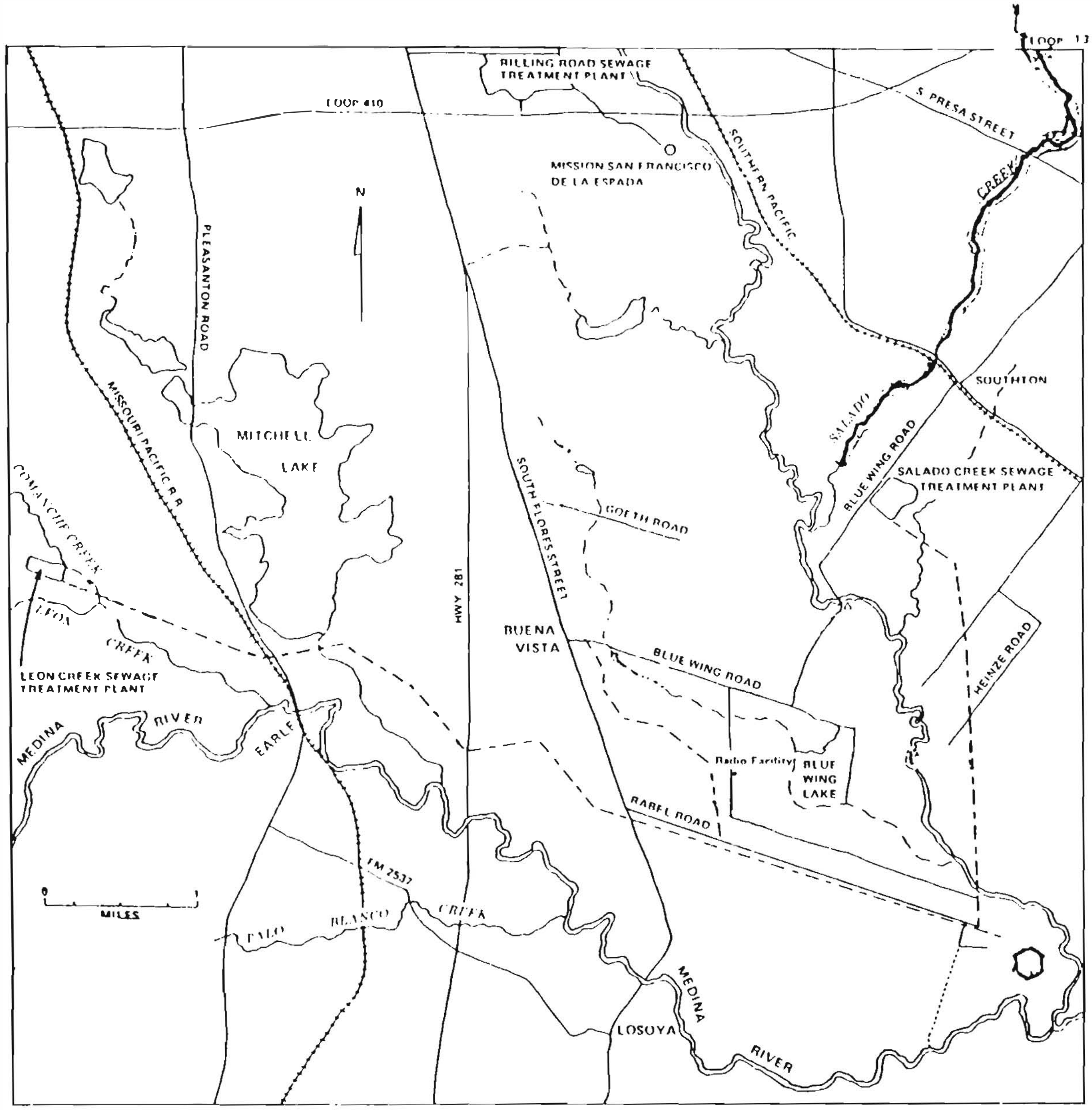
Details of the environment along the creeks and rivers of southern Bexar County has been described by McGraw (1977). Vegetation along these areas consists of large trees and zones of dense brush. Survey outside the creek bank was usually in cultivated floodplains. Repeated deposition at sites seems quite likely as much of the survey area floods in excess of 100 m from present stream channels. Deep deposits of alluvium and changing stream channels complicate the location and investigation of sites. For the most part, the 201 survey was confined to creek banks.

THE 201 SURVEY - SOUTH

This section of the survey extends from SE Military Drive (Loop 13) to the Salado Creek Treatment Plant. All five sites described below were located south of SE Military Drive and north of Southton Road. The segment of the creek from Southton Road to the treatment plant is characterized by steep walls and terrace tops. Since the survey was basically confined to creek banks, sites along the terrace tops south of Southton Road were undoubtedly missed.

41 BX 358

Location: This site lies on the east bank of Salado Creek in a cultivated field. Part of the site is under a power line south of the Loop 410 and Interstate 37 cloverleaf intersection.



201 Survey - South

201 Survey - Extension

41 BX 124 - Tested

Figure 1. General areas of survey and testing. (Adapted from Fox, McGraw and Valdez 1978).

Description: The site dimensions were not determined due to cultivation disturbance. Lithic debris and burned rock constitute the cultural material found at the site. Although a few sherds of mid-19th century earthenware were found, no other indication of a historic site exists.

Comments: No further work was recommended for this site due to the great amount of disturbance and the meagre artifact count.

41 BX 359

Location: Also located on the east bank of the creek, this site lies approximately 250 m south of site 41 BX 358 and 70 m east of the power line. Much of the site is in a cultivated field, and this has caused considerable disturbance.

Description: Cultural materials, including cores, a few biface fragments and thinly scattered flakes, were spread over a large area with no apparent concentrations.

Comments: No further work was recommended in view of the disturbance.

41 BX 360

Location: This site, though badly disturbed today, was observed by C. D. Orchard in the 1920's (Fox 1977:17). It is located between Salado Creek and a bulldozer-cut canal east of the Loop 410 and Interstate 37 intersection.

Description: Evidence of the site was confined to lithic debris which was widely scattered. Bulldozing had mixed and removed most of the site but some fill material was present. The size of the site was estimated to be 50 m by 60 m.

Comments: Due to the extent of disturbance no further work at this site was recommended.

41 BX 361

Location: Approximately 500 m northwest of the Loop 410 access road, this site is on the east bank of Salado Creek. Part of the site, approximately 1 m of the upper deposits, had been removed. The extent of site damage is uncertain.

Description: Roughly 20 m by 200 m of the site is discernible and contains lithic debris as well as tools and biface fragments. The full extent of the site is thought to be 90 m by 200 m.

Comments: Although part of the site has been removed, indications are that it still contains much information. Testing was recommended to determine the extent and content of the site.

41 BX 362

Location: This is the only site of this survey located on the west bank of Salado Creek. It lies on a terrace over 400 m south of SE Military Drive.

Description: The site extends over an area 45 m by 60 m. Surface evidence includes flakes, cores and biface fragments. Snails and mussel shells were also observed.

Comments: Based on observed materials, testing was recommended. Determining the extent and depth of the site should be the primary focus of such investigations.

THE 201 SURVEY - EXTENSION

The extension survey focused on three potential pipeline routes. First, an area extending southward from the Salado Treatment Plant to the confluence of the San Antonio and Medina rivers was investigated. A second line of investigation stretched more than 1.5 km east of the Leon Creek Treatment Plant. The third course was a line from near the Ashley Site, 41 BX 124, northwestward toward U. S. Highway 281. A branch of this section extended north to Blue Wing Road forming a 'Y' shaped survey. Most of the areas surveyed were under cultivation making accessibility and visibility a minor obstacle. The cultivation has partly destroyed a few of the sites. Four sites were recorded and are described below.

41 BX 330

Location: This site is on a terrace top, at the end of Heinze Road, on the east side of the San Antonio River. Some road grading made site recognition easier as most of the lithic debris seemed to occur at 10 cm below the surface.

Description: Stretching 250 m along the terrace, the site may also extend 250 m away from the river. Although no diagnostic lithic artifacts were located, a biface fragment, flakes and one *Goliad* sherd were noted.

Comments: Due to heavy disturbance and erosion, no further work was recommended. The site's location is outside the proposed pipeline route and is in no immediate danger.

41 BX 331

Location: The site lies in a cultivated field south of Blue Wing Road.

Description: Estimated to be 300 m by 250 m, this site is represented by lithic debris thinly scattered over a large area. The site area appears to have been under cultivation for an extensive period of time.

Comments: The site lies primarily out of the right-of-way of the proposed sewer line. The amount of disturbance from cultivation is wide. Based on these two observations, no further work was recommended.

41 BX 332

Location: This site is approximately 300 m southeast of the S. Flores Street and Blue Wing Road intersection. The site is in a small field and refuse dump of several houses facing S. Flores Street.

Description: Primarily represented by flakes, the site measures 100 m by 150 m. It is disturbed by modern debris and visibility was limited due to tall grass, weeds and thorny brush.

Comments: Due to surface disturbance, no further work was recommended, although it was suggested that an archaeologist be present if subsurface work is initiated.

41 BX 333

Location: The site is atop a terrace at the confluence of Leon Creek and Comanche Creek. The survey extended over 1.5 km east of the Leon Creek Treatment Plant.

Description: Estimated to be 80 m by 80 m this site has lithic debris and several tools were noted. There presently exists a historic component over the prehistoric site. There were no indications of subterranean disturbance.

Comments: Testing is essential for determining the depth, extent and chronology of the site.

SURVEY: CONCLUDING COMMENTS

A total of nine sites have been discussed. Of these, three, 41 BX 361, 41 BX 362 and 41 BX 333 were recommended for testing in a later phase of the project. Another site, 41 BX 332, has been recommended for observation by an archaeologist if it is to be altered by pipeline construction. A capsule review of the nine sites is presented below:

Site	Approximate Size (area)	Time Period	Recommendations
41 BX 358	undetermined	Prehistoric Possible Historic	no further work
41 BX 359	undetermined	Prehistoric	no further work
41 BX 360	50 m x 60 m	Prehistoric	no further work
41 BX 361	90 m x 200 m	Prehistoric	testing
41 BX 362	45 m x 60 m	Prehistoric	testing
41 BX 330	250 m x 250 m	Prehistoric	no further work
41 BX 331	300 m x 250 m	Prehistoric	no further work
41 BX 332	100 m x 150 m	Prehistoric	possible observation if sub-surface disturbance is commenced
41 BX 333	80 m x 80 m	Prehistoric w/Historic component	testing

THE ASHLEY SITE: 41 BX 124

The Ashley Site (41 BX 124), also known as the Confluence Site (Fox 1977:22), was first reported in July 1977, by David Brown of the Center for Archaeological Research, the University of Texas at San Antonio. Mr. Marvin

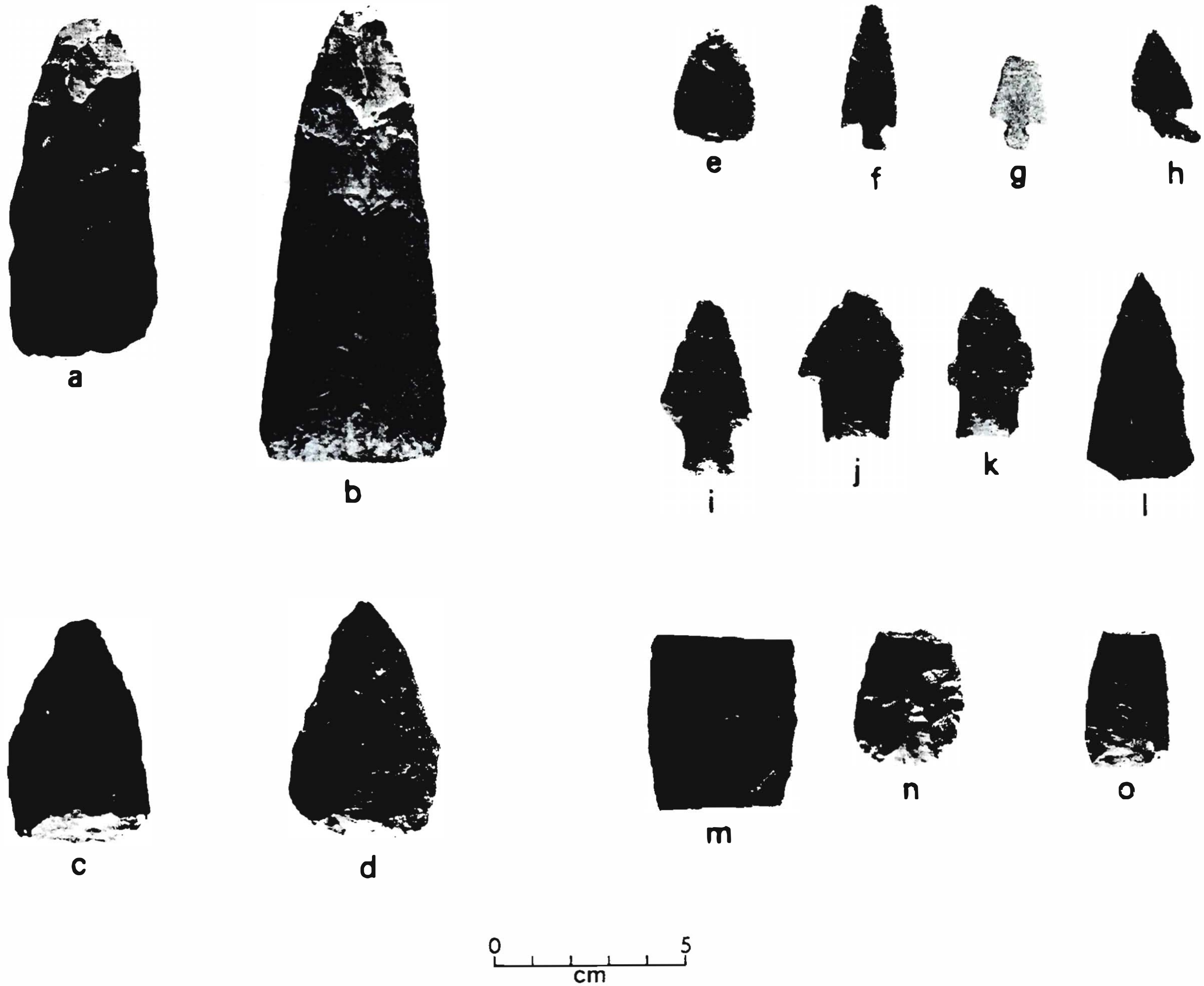


Figure 2. Artifacts from the Ashley Site (41 BX 124). A, *Guadalupe* tool; b, *Clear Fork* tool; c, *Guadalupe* tool; d, bifacial tool; e, arrow point preform; f, *Scallorn* arrow point; g, *Scallorn* arrow point; h, *Edwards* arrow point; i. possible *Gower* dart point; j, *Bulverde* dart point; k, *Bulverde*-like dart point; l, *Tortugas* dart point; m, medial portion of bifacial tool; n, projectile point preform; o, *Tortugas* dart point. (After Fox 1977:23)

Ashley, proprietor of the site, put on loan to the Center his surface collection of artifacts from a knoll overlooking the confluence floodplain. The site is approximately 150 m by 200 m, although cultural material was noted as far as 450 m from the knoll center. Dating of the site by means of diagnostic artifacts (Fig. 2) indicates Archaic (approximately 6000 B.C. to around A.D. 1000) to Late Prehistoric (ca. A.D. 1000-1600) occupations. Historic research for the property is also of interest as it was part of an early 18th century Spanish land grant to the de la Garza family (Fox 1977:22).

Test Units

Two 50 cm^2 units were excavated by A. J. McGraw and F. Valdez, Jr. in May 1978 at the Ashley Site. The site is partially located within a pig pen which has been bulldozed several times. Most of the Ashley artifacts (Fig. 2) were found during the moving of topsoil indicating some depth to the site. Unit one is located outside the pig pen and was dug to a depth of 40 cm. This unit showed no lithic concentration or diagnostic artifacts. Some flakes were noted but a more extensive program of excavation would be necessary to determine the extent of cultural material. The second unit was located in the pig sty and excavated to 30 cm. No chipped stone was noted below 16 cm, and at 30 cm the unit floor was composed of unaltered chert cobbles.

Testing: Concluding Comments

Diagnostic artifacts do exist, at this site, as evidenced by the Ashley collection. However, the limits and depth of the site are yet to be determined. Perhaps testing outside the pen in deeper soils will produce more complete data on this important prehistoric site in south Bexar County.

CONCLUSION: SURVEY AND TESTING

Ten sites were recorded in south Bexar County. In terms of area covered the number of sites located is relatively low and their probability for producing information seems to rank below sites recorded throughout north Bexar County. The deeply buried situation of the sites in the southern part of the county may make these sites harder to investigate. With more investigations such as that planned for 41 BX 124, a specialized method of testing southern Bexar County sites should evolve. Only through continued research will it be possible to define the nature of the prehistory of this area.

ACKNOWLEDGMENTS

Special thanks are due to Dr. Thomas R. Hester and Mr. Jack D. Eaton for their unfailing guidance and confidence. T. R. Hester and Anne A. Fox read the first drafts of this report and are thanked for their comments. Appreciation is also extended to Joan F. Valdez for the task of typing several drafts of this paper.

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EXPERIMENTAL HEAT-TREATING OF FLINT

L. W. Patterson

It has been known for some time that thermal alteration of siliceous minerals can enhance chipping properties for stone tool making (Crabtree and Butler 1964). Heat-treating has become an important procedure in experimental flint knapping. There is a long tradition of heat-treating of flint by North American Indians, demonstrated by data from many archeological sites, from the Paleo-Indian period to late prehistoric time (Bradley 1974, Patterson 1976). Good results in stone tool making can not be obtained from some materials unless heat-treating is employed (Crabtree 1967, Sollberger and Hester 1973:181). This practice was even extended by some Indians to the selective heat-treating of specific areas of raw material pieces (Patterson 1975).

In experimental flintknapping, I have been using Fayette County cherts as a convenient source of raw materials. These materials are found in nodular form in stream beds, originating from alluvial deposits. The quality of these materials is highly variable, and even the best types are fairly tough for knapping purposes. While I had been considering heat-treatment of these materials for some time, I was under the impression that a special oven would be required. For example, Flenniken and Garrison (1975:129) cite a minimum temperature of 450°C (842°F) required for adequate modification of novaculite, and Purdy and Brooks (1971:322) state that 350 to 400°C (662 to 752°F) is required for Florida cherts. J. B. Sollberger (personal communication) recently informed me that he feels that many archeologists overestimate the minimum temperature required for heat-treating of flints and cherts. Some of the higher temperatures given in the literature may give good results, but are really not needed for many grades of flint. Sollberger has stated to me that: "Most Texas flints and cherts heat-treat for knapping between 350 and 500°F. Novaculite requires higher temperatures. For non-novaculites, four hours is usually sufficient time for good results." Based on this advice, I tried thermal alteration of Fayette County cherts, using my home electric oven, and obtained good results.

Several experiments are described here, all involving the heat-treatment of flakes. No attempt has yet been made to treat whole large chert nodules. In the first experiment, flakes were treated for two hours at 500°F (260°C). No special heatup rate was used. The oven was simply loaded and turned on. At the end of the heating period, the oven was turned off and kept closed for gradual cooling. During heating, a definite reddish color change was observed on all flakes within 15 minutes. In a second experiment, the same general procedure was used, except that heating was done for four hours at 500°F.

The appearance of heat-treated materials from the first two experiments is all the same. Flake surfaces have a deep reddish color. The interior material color changed from medium brown to light tan, and a waxy luster occurred in place of a dull appearance of the original material, on new flake scars. The fact that only the flake surfaces became deep red is an interesting observation. This probably means that Indians treated flakes instead of whole nodules on many sites. I have observed many flakes with reddish surface colorations on Texas archeological sites. In these experiments, only a few very thin flakes developed reddish colorations for the entire flake thickness. I feel that this selective surface color change may be due to oxygen in the air reacting with trace chemical impurities on the surface of the chert.

As mentioned, the interior material did change to a lighter tan color and assumed a waxy luster on flake scars made after heat-treating. If the entire surface were removed during tool making, there would no longer be any reddish discoloration on the finished tool to indicate that heat-treating had been used. Thermal alteration could still be detected, however, by study of the debitage. Unfortunately, some flints have a natural waxy luster, so that this attribute is not always a reliable guide by itself that heat-treating has been used.

Out of 40 specimens from the first two experiments, poor results were obtained for only one specimen, a thin secondary cortex flake. This specimen developed a severe surface "craze" and actually popped off some small flakes during the first hour of heating. For this specific material, it was judged that a temperature of 500°F may be too high, or a more gradual heatup period might be required. Very good results were obtained for all other specimens, which included several types of chert.

Because of the failure in heat-treating of one specimen, a batch of six flakes of this specific material were heat-treated for two hours at 500°F. All of the material was ruined. This specific material is a dark fine-grained chert which may be similar to the Texas materials that Sollberger and Hester (1973:182) note are ruined at temperatures much above 400°F. This experiment was repeated, using a gradual heatup rate of 10 minutes per 100°F, until 500° was reached. The material was then held at 500° for three hours and finally gradually cooled in the oven. Some surface "potlidding" still occurred, but not as severe as before. Based on these experiments, some types of flint seem to require a gradual heatup and/or lower treating temperature for satisfactory results.

I now use a heatup rate of 10 minutes per 100°F as standard practice. As a word of caution, it should be noted that some materials require even slower heatup rates. This is probably especially true of larger pieces of material. Explosive failures have been noted for Florida cherts (Purdy 1974:40; 1975:135) when heatup rates were as slow as 50°C (122°F) per hour. In previous experiments (Patterson 1975), no failures were experienced when heating selected small areas of chert specimens very rapidly. This is because of the types of materials used, and the fact that a large mass adjacent to the heated area dissipates the heat.

In subsequent experiments, it was observed that some types of chert do not have reddish color changes from heat-treating, although there can be other color changes in some cases. Lack of reddish color changes probably indicates that few iron compound impurities are present. Also, it is noted that some chert turns red only near the cortex, indicating that trace impurities are not always uniformly distributed.

Changes in color and texture of flints caused by thermal alteration may sometimes cause problems in attempting to identify original lithic sources used to supply specific archeological sites. Experimental heat-treating could be an aid in this type of study. On the Texas coast and adjacent regions, identification of exact locations of flint sources is probably not possible in any event, without use of sophisticated analytical techniques such as neutron activation. There are numerous alluvial deposits here with similar types of chert. In archeological reports throughout North America, I feel that there is sometimes more certainty given to identification of flint sources than is actually justified.

Some of the materials from a single flint nodule were used for experiments, and to make two bifacial dart points before thermal alteration. All flintknapping was done by hard percussion. It was noticeably easier to make a bifacial dart point from the material that had been heat-treated for two hours. It was still easier to make a bifacial dart point from material treated for four hours, and there were less abrupt flake terminations. It was possible to remove flakes that were about twice as long from the material treated for four hours, compared to untreated material. This is consistent with observations by Flenniken and Garrison (1975:129) for heat-treating novaculite. It is also consistent with J. B. Sollberger's (personal communication) observation for flint that heat-treating allows flakes to be removed with about four times greater surface area. Sollberger and Hester (1973:181) state that 30 percent less force is required to flake heat-treated materials, and Purdy and Brooks (1971: 324) estimate a force reduction requirement of 45 percent, based on tensile strength testing.

Since a home cooking oven seems to be satisfactory for heat-treating of some siliceous minerals, many experimental flintknappers should be able to improve the chipping qualities of their lithic materials without the need to obtain expensive heating equipment.

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THE FLINT PERSPECTIVE

Major Howard D. Land

Though now sluggish from old age, Thunderman has been making his own stone tools for over twenty-six years, having started at the early age of six. His expertise has often been his savior, and many envious smiles have crossed the serious faces of his fellow hunters. As this master craftsman sits by his campfire and knocks out the final thinning flute of a large and finely chipped spear point, he can not but help wonder how tomorrow's elephant hunt will go. May Thunderman's Spirit Guide and Mystic Helper be with him always so that he, too, can survive for a few more weeks. May his offspring's offspring see a favorable tomorrow, for they are chosen!

The professional and citizen archaeologist, the relic collector, the museum curator, the anthropologist, the flint-knapper, and the general public are fascinated by prehistoric artifacts, especially projectile points. Of the many variations in point types, those of the Paleo-Indian variety receive considerable attention. Of these, the Cody Complex, Folsom, and Clovis traditions get the most notice--primarily because of the superb workmanship and flint-knapping techniques necessary to the production of the nicely shaped, lenticular blades. Beautiful transverse, parallel flaking and fluting are also admired because of their difficulty in execution. Such accomplishments are envied by the practicing flint-knapper and have marked the practice as an art, both old and new. These points also represent major time markers in the study of Early Man, forming a basis on which associated studies have been concentrated. Of all the available subjects pertaining to North American archaeology, the study of these early inhabitants can be one of the most rewarding and interesting.

It is in this area that the author has concentrated, with the objective of providing already knowledgable individuals with additional insight into the replicating of certain Paleo-Indian tools as seen from the modern flint-knappers viewpoint. For others, I hope to arouse an interest in the subjects of both Early Man and flint-knapping. A secondary objective is to speculate on the probable application of specialized flaking tools and techniques, and to present information gained from experimental usage of certain replicated tools and observations made during the flaking process and not currently noted in the literature. The author will not attempt to cover the vast amount of theory, methods, and techniques of flint-knapping so expertly provided in the literature by Crabtree, Bordes, Ellis, Mewhinney, Sollberger, Callihan and many others. A reading list has been provided for further in-depth study. Suggested references on certain aspects of flint-knapping and associated study are also provided.

Experience has shown me that there are four basic considerations which I believe to be the most important aspects of knapping stone tools, especially projectile points. These have not been clearly defined or emphasized in the past. They are:

1. Condition and grade of the <u>material</u> to be worked and the <u>tools</u> to be used.

2. Platform preparation by edge grinding.

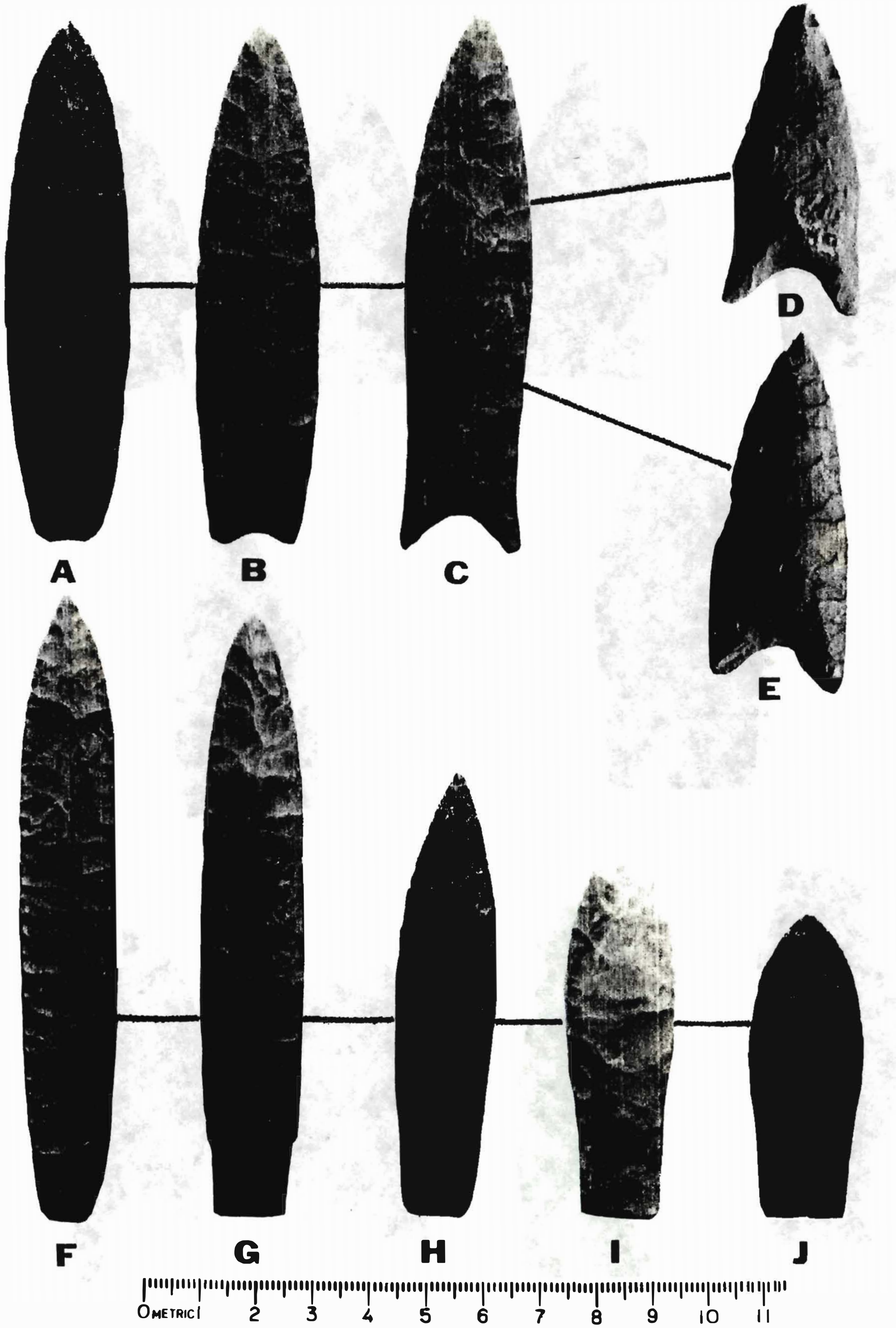

Figure 1. A, *Agate Basin*; B, *Clovis*; C, *Golondrina*; D, *Meserve*; E, *Dalton*; F, *Agate Basin*; G, *Eden*; H, *Nebo Hill*; I, Texas *Angostura*; J, *Hell Gap*.

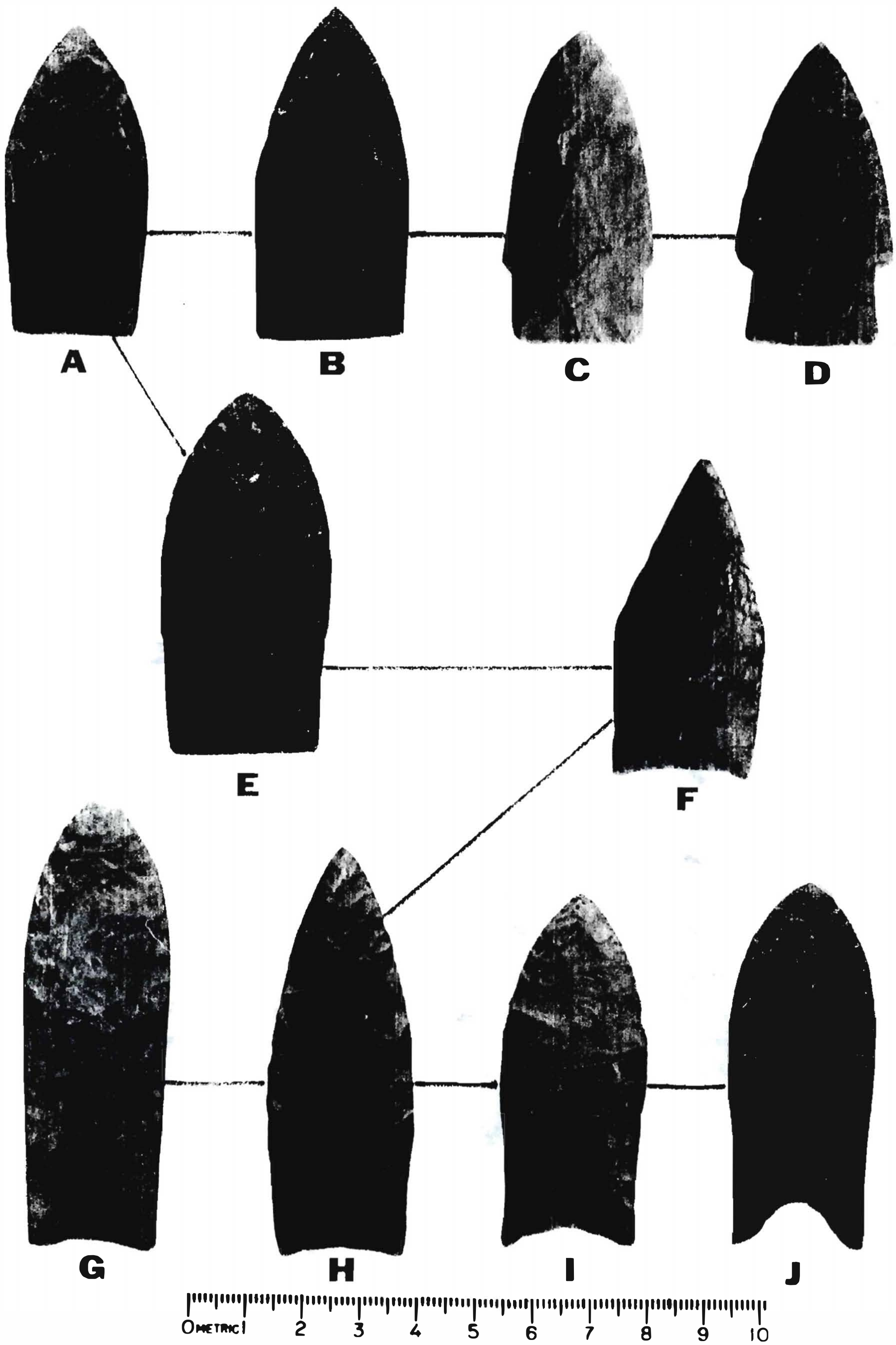

Figure 2. A, *Milnesand*; B, *Firstview*; C, *Scottsbluff*-Type I; D, *Scottsbluff*-Type II; E, *Firstview*; F, *Meserve*; G, *Plainview*; H, *Clovis*; I, *Clovis*; J, *Clovis*.

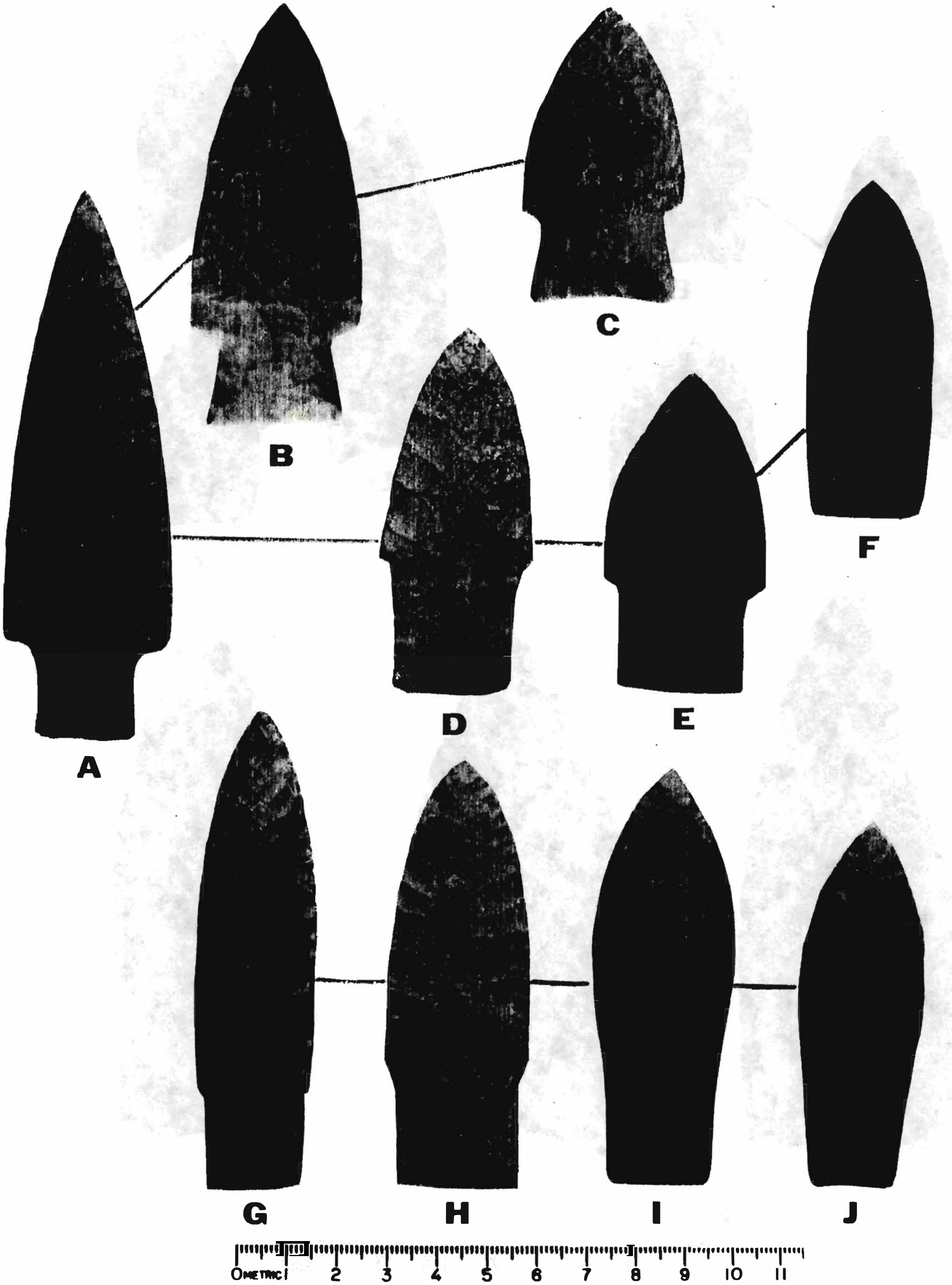

Figure 3. A, *Scottsbluff*-Type II; B, *Scottsbluff*-Type II; C, *Scottsbluff*-Type II: D, *Alberta*; E, *Alberta*; F, *Milnesand*; G, *Scottsbluff*-Type I; H, *Scottsbluff*-Type I; I, *Hell Gap*; J, Texas *Angostura*.

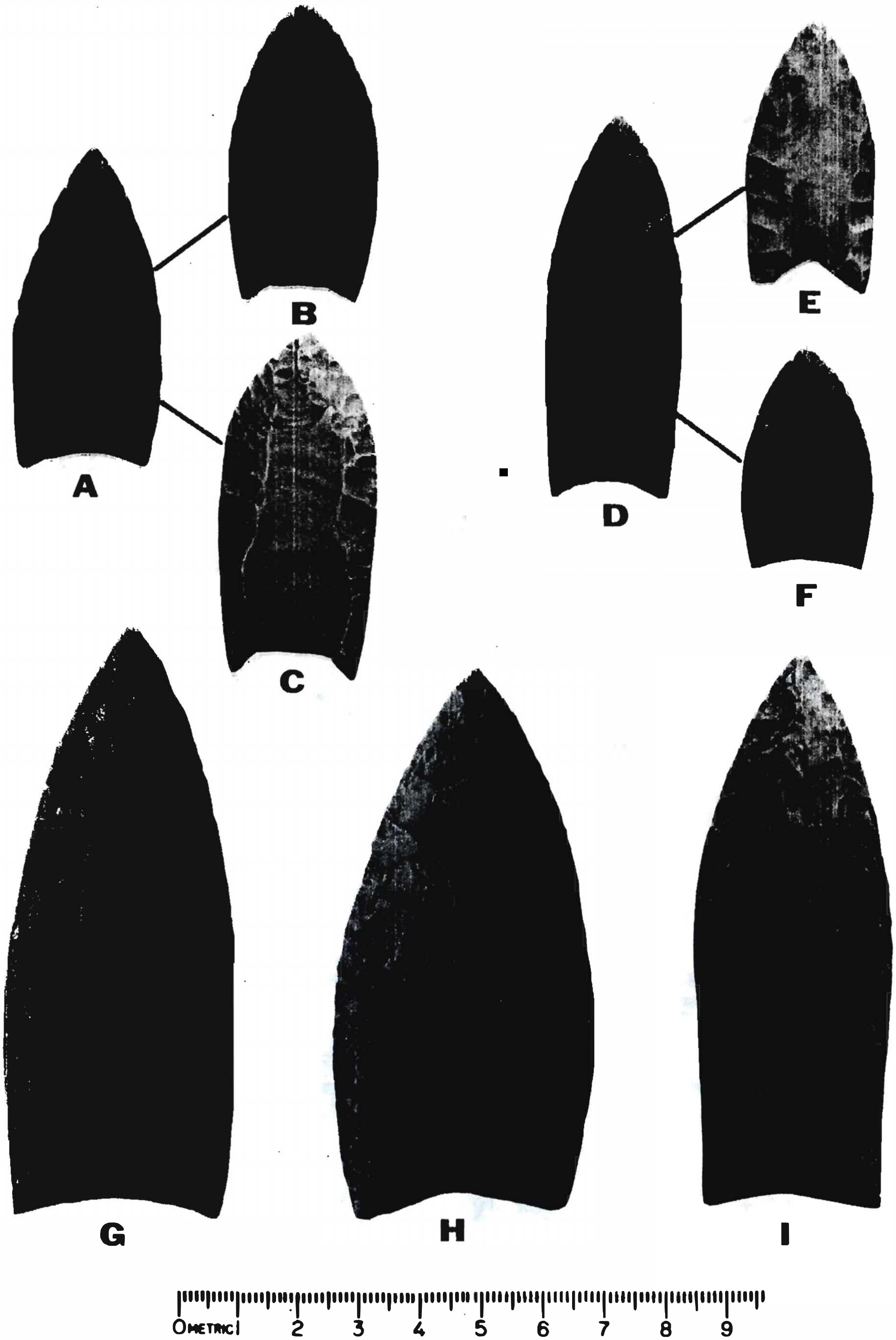

Figure 4. A, *Clovis*; B, *Folsom*; C, *Folsom*; D, *Clovis*; E, Resharpened *Clovis*; F, Resharpened *Clovis*; G, *Clovis*; H, *Clovis*; I, *Clovis*. (G, H, and I Percussion Flaking and Fluting).

3. Adequate means of dislodging large, flat blades from a core and the removal of long, thin secondary flakes from the blades.

4. Familiarity with the actual point or tool type under consideration, a good mental template for the object to be replicated, and imagination.

The first consideration is all important. Many a person has picked up a rough looking, unsymmetrical quartzite point and commented on how crude it was and even assumed, erroneously, that it was very old. The same person may have later learned that the crudeness was not the result of poor workmanship but rather the result of poor material. He may have also learned that crudeness does not necessarily indicate extreme age and that old points are usually better made than more recent ones. The flint-knapper who is striving to perfect his art will try to obtain the best material available. In other words, workmanship is directly proportional to the material used. It is no coincidence that a large percentage of the Paleo-Indian specimens found are made from "exotic" cherts, flints, obsidian, agate, jasper, dolomite and other homogeneous materials. The working characteristics of these materials are varied and many. The flint-knapper must become familiar with their characteristics because they are critical to the manufacturing process, especially the end result. Crabtree is an excellent reference for a discussion on materials.

As with any other trade or handicraft, tools are very important to the user for it is through their shape, texture, and individual traits that the material is transformed into the desired product. The flint-knapper must try to obtain the very best tools available and to properly care for them, to understand their proper application, and to use them as if they were an extension of himself. Depending upon individual desires, objectives, and philosophy, tools can either be the same basic tools used by prehistoric man, satisfactory substitutes for the same tools, or modern, technically conceived and super sophisticated devices. Even purists will occasionally deviate from the use of certain tools as seen by the substitution of copper rods for deer horn--in the application of pressure flaking. Refer to Crabtree for a discussion on tools and to Mewhinney for the interaction of materials and tools.

The second consideration is one of the most important in flint-knapping. If there is a secret to this ancient art, then it consists of platform preparation by edge grinding. From a technical standpoint, each blow or pressure point must have a platform of adequate size and shape. Platform preparation allows the worker more control over the flake to be detached. When set in concert with the proper amount of force, direction and applied technique, the results are usually predictable in a favorable manner. Connsistency in procedure results in excellent work. Using an abrasive stone to grind off undesirable sharp edges of the primary working edge results in setting up small platforms as well as diminishing the effects of crushing. Platform preparation is extremely useful for direct percussion work with a soft billet. This type of work is one of the most beautiful known though extremely difficult to properly execute. Edge grinding is also useful in support of the pressure flaking method, especially during the final retouch phase when long, thin flakes are desirable.

The third consideration is a function of aptitude, knowledge, suitable material and the right tools. The dislodging of blades having certain desired characteristics is one of the most difficult aspects of flint-knapping. Practice and experimentation are the best avenues of approach. There are so many variables involved with blade making that it is impossible to adequately describe them in print. Crabtree, Mewhinney and Sollberger are good references for this subject. Of particular importance is the proper size, shape and make of the hammer to be used as well as the grade quality of the material to be worked. There must also be a good understanding of the nature of flint and its interaction with the hammer. Mewhinney explains this very well. Another trade secret is the countering of the "rebound" of the material after a compression blow has been struck, thus preventing an undesirable snap fracture. This is done by placing pressure (usually the middle finger and thumb) on either end of the piece being worked while the blow is struck. Follow-through, to prevent hinge fractures, and shock absorption into an anvil (usually a leg thigh) are also important, especially in making blades that are thin and straight. Freehand-held core techniques produce curved blades. It is best to use an anvil for straight blades. The removal of long and thin secondary flakes can be accomplished by several methods using both percussion and pressure. A proper contact between tool and material, an acute angle of constant and applied pressure, a detaching twist and pull off, and a proper follow-through are important aspects to note. Refer to Crabtree and Sollberger for more detail on techniques and concepts.

The fourth consideration is based on experience of the individual, on study, and on opportunity. An artist must be able to perceive a physical object before he can produce it. A mental template has to be formed through which the human body senses, interprets and feeds back certain comparative characteristics of the object being worked. This entails a complex interaction of sight, touch and muscular action. To replicate an object already in being, a whole new set of problems are encountered. The flint-knapper must be most familiar with the object that he is to replicate. This usually requires a close observation of actual artifacts and a purposeful examination of all their physical characteristics, including the type of material, shape, size, method of manufacture, secondary work, etc. Van Buren is a good reference for this subject.

As a result of much experience in replicating Paleo-Indian type projectile points, the author began to perceive a relationship to certain shapes which were easily transitioned from one type to another. This does not mean that such a transition holds true for the chronological sequence of cultural groups, but it is interesting to make a note of them. In fact, the author suspects that there were several migrations of differing groups over the past fifty thousand years and that these groups often coexisted, even to the point of having two major traditions existing at the same time for a period and in the same locale (Paleo-Indian and Archaic). Some adaptation and transition of projectile point types were certainly possible. The question is--which ones?

Stone tools sometimes show reflections of these transitional relationships, at least in the minds of some. It is also interesting to note that sometimes there exists a situation where differing point types have been found together, as in an Ohio moundbuilder cache, a human burial in Texas, and extinct bison kill sites on the High Plains. This sometimes causes distress among typologists and brings about much conjecture as to its meaning.

As was stated, the knapper begins to perceive a sequence of shapes and characteristics which can be aligned in a specific order. Once thinning and rough outline are complete, transition from one point type to the next is relatively simple. Refer to the figures for a visual representation of such transitioning.

The *Agate Basin* (Fig. 1 A) is easily made into a *Clovis* (Fig. 1 B) through purposeful fluting or thinning of the base. Its base is an ideal platform for fluting as was the similarly shaped *Cascade* of the Old Cordilleran tradition of the west coast. These simple forms are reminiscent of the Old World. The long form with an indented base is easily transitioned to a *Golondrina* (Fig. 1 C) or with bevelling (reworked broken point), to a *Meserve*

(Fig. 1 D) or to a *Dalton* (Fig. 1 E). *Agate Basin* shapes are also easily transitioned to *Eden* (Fig. 1 G) or to *Nebo Hill* (Fig. 1 H), Texas *Angostura*/weak-shouldered (Fig. 1 I), and *Hell Gap* (Fig. 1 J). Particular attention has to be paid to final flaking pattern when completing the final shaping phase. *Scottsbluff* forms are easily transitioned to variants of the *Scottsbluff* type (Fig. 2 A-D) starting with the *Milnesand* point (Fig. 2 A). Slight edge grinding results in the *Firstview* point (Fig. 2 B). Heavier grinding and stem removal results in a *Scottsbluff*-Type I (Fig. 2 C) and a *Scottsbluff*-Type II (Fig. 2 D). Re-sharpening of a *Firstview* (Fig. 2 E) and bevelling can result in a *Meserve* (Fig. 2 F). A *Plainview* (Fig. 2 G) can be fluted to make a *Clovis* (Fig. 2 H). Removal of the hafting edge and a deeper base results in an eastern variety of *Clovis* (Fig. 2 I). Still deeper basal removal results in a *Clovis* point like those at Debert in Nova Scotia (Fig. 2 J). The *Scottsbluff*-Type II is easily worked in variants of itself (Fig. 3 A-C) or to the *Alberta* point (Fig. 3 D, E). The *Scottsbluff*-Type I can be worked into such types as *Hell Gap* and Texas *Angostura* (Fig. 3 G-J). The *Clovis* point (Fig. 4 A) can be made into a *Folsom* (Fig. 4 B, C) by extending the flutes and accomplishing additional retouch along each edge margin, and by forming the base with ears. The *Clovis* can also result in variants by accomplishing rework of a broken specimen as seen in Fig. 4 D-F). These are but a few of the many possibilities. All shapes generally emanate from a rectangular, triangular, or elongated form. It is good practice to draw a triangle and shade in the projectile point form one has in mind.

Basically man has an inborn desire to make shapes concentric and simple. We are merely programmed that way. With the exception of the single-shouldered *Sandia* point and the *Cody* Knife, most all Paleo-Indian tools are intentionally fabricated in a concentric, bifacial manner. Man will invariable try to compensate for crooked lines, bulges or awkward lines of form. We see this compensation taking place in the changing projectile point, primarily where the haft is made. This is most readily evident in the *Firstview*, *Scottsbluff*, *Eden*, and *Alberta* forms where heavy edge grinding may have started the trend. The desire to finish a point to its fullest potential is very strong in the flint-knapper--even at the risk of failure. This is often seen in instances where the knapper tried to flute too thin a preform or take out a difficult knot or hinge fracture.

Experience in flint-knapping has resulted in several other personal observations. As the result of having suspicioned that certain individuals were selling replicated points as authentic specimens to unsuspecting buyers, the author began to wonder just how well such replicas could be faked. After a long period of study and many interviews with numerous experts, the author came to the final conclusion that the matter was inconclusive and that "faith" and "trust" were paramount, and that the buyer had better "beware." Figures 1 D and E, 2 F and H, 3 D and F, and 4 A, B, C and I display a degree of "patina" that is thought to be a sure sign of authenticity, especially the *Alberta* point shown in Figure 3 D. These points were treated with caustic soda by the author during studies relative to the process of patination--thereby showing that patina can also be faked.

Along these same lines, the author has found that freshly broken flint has a moist, glassy appearance and feel. The same piece of flint will take on a slight haze after approximately four months of exposure to the ambient atmosphere (not directly exposed to ultraviolet light from the sun) with the original color turning a shade lighter. It is speculated that this is due, in part, to a drying of surface moisture and that continued drying would eventually contribute to a condition generally referred to as "weather fracturing," or the disintegration of massive mineral matter. The formation of patina is believed to be a "rotting" of the flint as acted on by soil composition, particularly alkaline soils that leach out certain minerals.

Basic experimentation with heat-treating has shown that excessive artificial heating results in an appreciable loss of moisture. Experiments conducted by applying 1,000°F of heat to four pounds of flint (massive) for eight hours resulted in loss of approximately thirty-five percent of the weight. A noticeable loss in texture, mass, and fracture was also observed. Excessive heating caused the material to fracture in multiple planes thus causing it to crumble when struck by a sharp blow (random fracture).

Artificial, indirect heat-treating is recognized as a practical means of improving the flint-working characteristics of some materials, especially the coarser grained silicates such as quartzite (Crabtree and Sollberger are excellent references). These applications were most certainly used by Early Man to improve both material and workmanship--as evidenced by the reddish and pink color left as the result of applied heat.

After having read Mewhinney's description of detaching a Levallois flake from a preform, it occurred to the author that this form of flake preparation parallels the concept of flute making. Easy flake removal is perpetrated by preforming in advance. Pressure within the core blade is relieved in such a manner that a primary channel flake is more easily removed, mostly because the ridges of previous flake scars and the round shape provide a better opportunity than a flat face. The more concentrically even and lenticular the shape of a point, the easier the task of fluting--especially by direct soft hammer percussion on a prepared platform. Refer to Crabtree for an excellent description of the fluting process. Sollberger has demonstrated a very plausible and satisfactory method of fluting and pressure flaking by the use of a "U" shaped device as used in conjunction with copper-tipped or antler flaking tools. The objective is to hold the blank preform across the horseshoe-shaped device in such a manner as to detach a flake by means of applying leveraged pressure to the top and opposite side of the preform. This device affords a means of detaching long, thin, flakes and channel flutes which are so well admired.

There are also many other methods of fluting, of which direct and indirect percussion are primary techniques. The author finds that direct soft-hammer percussion on a prepared platform, with the object preform being hand-held in such a manner that shock fracture/snap break are minimized, most closely approximates true *Clovis* fluting. Figures 4 G, H, and I are examples of fluting by direct percussion. Primary preforming was also by direct percussion with minimal retouch by pressure flaking. Figures 4 A through F were done by leveraged pressure using the Sollberger "U" device and a copper flaker. The author argues that fluting is merely an advanced stage of basal thinning.

Experimentation with the resharpening of projectile points is also very interesting. This technique of analysis shows that variations in form are often the result of resharpening and not a new point style or type. Bradley (Frison) discusses this concept as it relates to the Casper Site. The author has drawn his own conclusions about some of the points placed in the category of "*Meserve*". Figures 1 D and E and 4 E and F are examples of resharpening. Apparently there was considerable resharpening done by the Paleo-Indians, particularly where materials were scarce.

Experimentation with the replication and use of other lithic and bone tools is also interesting. These usually entail the use of knives, scrapers, gouges, drills, gravers, etc. Van Buren and Callahan are excellent sources for a discussion on experiments with replicated tools. See also previous issues of *La Tierra*.

Individuals with an advanced interest in flint-knapping will want to subscribe to *Flintknappers' Exchange*, Edited by Errett Callahan and Jacqueline Nichols, Laboratory of Archeology, Department of Anthropology, Catholic University of America, Washington, D. C. 20064.

The author hopes he has added a little more knowledge to the subject of flint-knapping and has aroused interest in lithic technology and Early Man.

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A *CLOVIS* POINT FRAGMENT FROM DEWITT COUNTY

Mark D. Hudgeons

A *Clovis* basal fragment was recovered from the Lost Creek Ranch outside of Cuero, Texas.

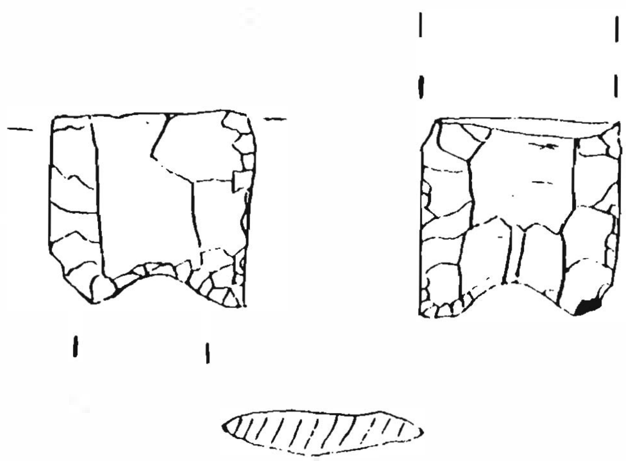
John C. Hamilton, owner of Lost Creek Ranch, had informed the author of several sites on his property. During investigation of the site areas, a possible *Clovis* projectile fragment was recovered from the surface in a gopher mound.

The artifact was sent to Dr. Thomas R. Hester, Center for Archaeological Research, The University of Texas at San Antonio, for type description. Dr. Hester confirmed this fragment to be of the *Clovis* type.

This particular specimen is translucent gray and partly patinated; it is manufactured out of grayish chert. It has heavy dulling on the base concavity and edges. Its maximum thickness is six millimeters.

The Handbook of Texas Archaeology states that the age of *Clovis* points is "somewhat greater than that of *Folsom* points, probably at least 10,000 B.C. and perhaps as early as 15,000 B.C. (Suhm and Jelks 1962)".

This is the first *Clovis* that the author knows of that has been recovered from DeWitt County. Perhaps with intensive scientific excavations at these various sites more evidence of the *Clovis* culture may be uncovered.



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A PRELIMINARY REPORT ON THE BURRIS SITE (41 VT 66), VICTORIA COUNTY, TEXAS

E. H. Schmiedlin
(with an addendum by T. R. Hester)

In May 1978, a previously unrecorded site was exposed by a bulldozer cutting a powerline right-of-way on the D. L. Burris property in Victoria County. The site was visited by the author, L. C. Curtis, and the landowners soon after it was exposed. No diagnostic artifacts were observed at that time. In June, 1978, the author, Don Will, Bill Birmingham and the landowners again visited the site and found that a large section of the area had been destroyed by bulldozers constructing a flume for the Coleto Creek Project being undertaken by the Guadalupe-Blanco River Authority. Additional archaeological materials were exposed by this construction-related activity, and this paper is an effort to record some of the materials recorded from the surface of the site.

Site 41 VT 66 lies on the south side of Coleto Creek .5 km downstream from its confluence with Perdido Creek. The site is located between sites 41 VT 52 and 41 VT 51 in an area that was believed to be out of danger as far as dam construction (Coleto Creek Project) was concerned (see the report of Fox and Hester 1976). Post-hole digger tests were conducted by the author after the site was discovered, and it was determined that the archaeological deposits are at least two meters in depth.

Archaeological materials recovered through surface collection consisted of:

- 31 bone fragments
- 11 mammal tooth fragments
- 2 specimens of shell
- 2 potsherds
- 1 fragment of sandstone
- 1 quartzite pebble
- 1 piece of hematite
- 26 whole and fragmentary bifaces

The bone was studied by Glen L. Evans of Austin. He identified most of the material as that of *Bison Bison* (buffalo). Also among the bone materials were nine large unidentified bone fragments, 16 small unidentified bone fragments, and a single piece of turtle carapace. Evans also examined the 11 mammal tooth fragments, and noted the teeth of seven adult *Bison*, four deer teeth, and the mandible of a rodent.

The two shells have been identified as a partial Sunray Clam (*Macrocallista nimbosa*) of Gulf origin, and a complete brackish-water clam (*Rangia cuneata*).

The pottery included a sherd of *Goliad* ware and one sherd with asphaltum coating (*Rockport* ware?).

The bifacially chipped stone artifacts included 17 large, crudely-flaked blanks or preforms, five thin bifaces (preforms or knives?), one *Morhiss* point (with asphaltum on the base), one *Marcos* point (with asphaltum on the base), one *Catan* point, and a fragment of a *Corner-tang* biface or knife.

Other items, as listed above, include a piece of altered sandstone, a modified quartzite cobble (cf. Chadderdon 1976), and a piece of ocher (hematite).

The site appears to date from Late Prehistoric and Late Archaic times. It is significant that a number of bison remains are found here. Based on the observations of the author, they appear to be related to the Late Archaic (Morhiss) occupations. Other bison remains from the area include a very large bison mandible found in the gully adjacent to 41 VT 15 (Bill Birmingham, personal communication), an early transitional Holocene bison skull from a nearby Guadalupe River gravel bar (Dr. E. Lundelius, personal communication), and bison remains from the J-2 Ranch site (41 VT 6; see Fox, Schmiedlin and Mitchell 1978).

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ADDENDUM
Thomas R. Hester

Subsequent to the discovery of the site, T. R. Hester, Anne Fox, Dan Fox, Alton Briggs (Texas Historical Commission) and David Welsch (GBRA), examined the locality in July, 1978. At that time, several thick bifaces (blanks: 80-90 mm long, 20-30 mm thick, and 55-66 mm wide) and two thinned preforms were collected (Fig. 1 a,b). They are made of gray to tan fine-grained cherts and quartzites. One flake-blade was also collected; it is 61 mm long, 26 mm wide and 5 mm thick. Eroding from the bulldozer cut near the base of the two-meter deposits was a fragment of a decorated bone artifact. Drilled pits and incised lines constitute the decorative motifs (Fig. 1 c). The specimen is 35 mm long, 9 mm wide, and 5 mm thick.

In addition to these collected specimens (all on file at the Archaeology Laboratory of the Center for Archaeological Research), the group noted scattered bison bone and fragments of deer-sized bone, some of which was burned.

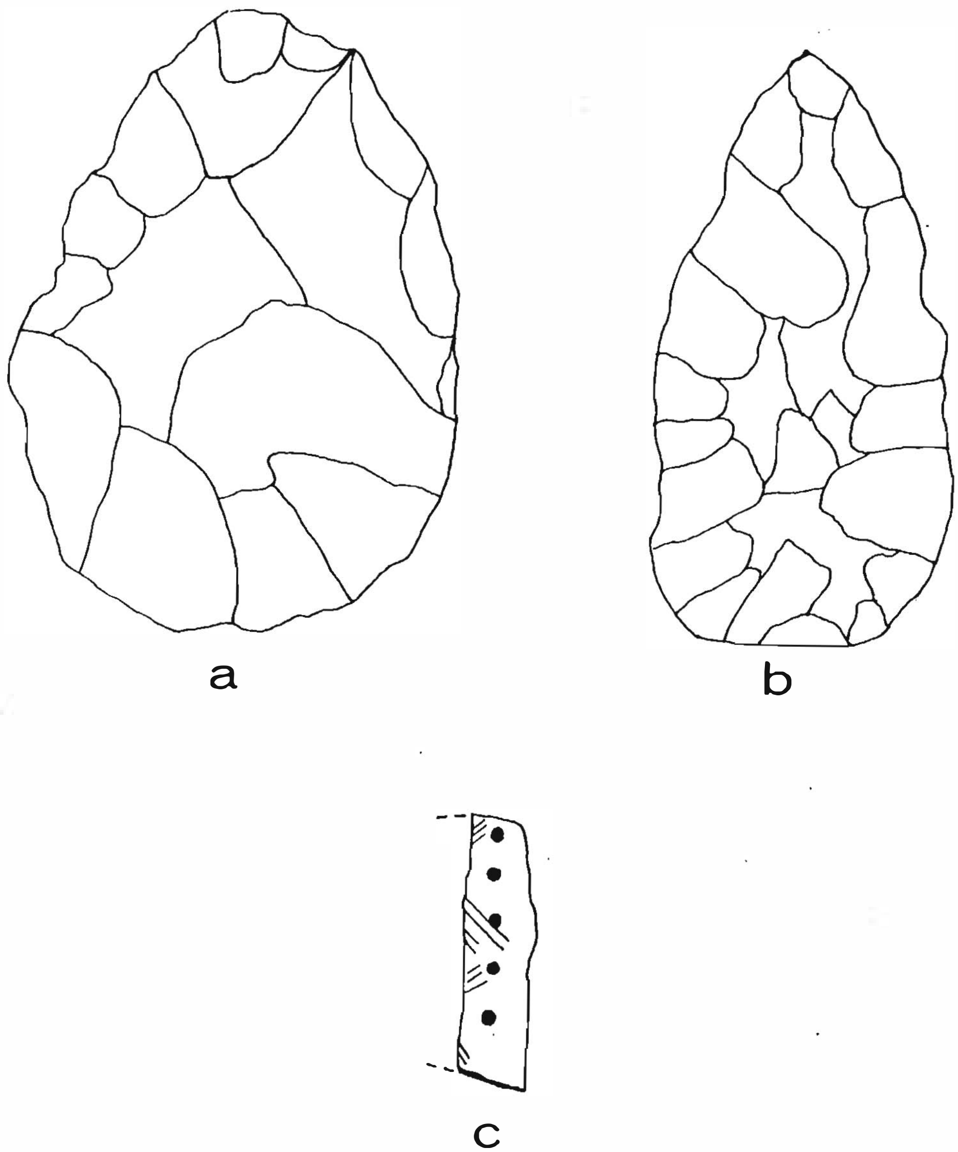

Figure 1. Specimens from 41 VT 66. a, b, bifaces (a, biface blank; b, biface preform); c, punctated and incised bone artifact fragment. All specimens illustrated actual size. On file, Center for Archaeological Research, The University of Texas at San Antonio.

ADDITIONAL COMMENTS ON ALTERED QUARTZITE COBBLES AND PEBBLES FROM CENTRAL AND SOUTHERN TEXAS

Harry J. Shafer

These comments on the possible function of certain altered quartzite cobbles and pebbles which occasionally occur in prehistoric assemblages in central and southern Texas were stimulated by Chadderdon's (1976) article in *La Tierra* describing quartzite artifacts from Victoria County, Texas. Chadderdon described several examples of the altered quartzite artifacts illustrating the range of variation and types of alteration. All have one thing in common in that they have been reduced by abrasion and battering. The resulting shape is most likely fortuitous having been the function of contact with a hand-held stone and a resistant surface.

Chadderdon provides an overview of the context indicating known site provenience and lists the range of diagnostic materials present at the sites yielding altered quartzite artifacts. One can argue that they are associated with Archaic assemblages and possibly occur in post Archaic associations as well. She also provides the reader with examples of similar specimens reported in the literature. Chadderdon carried out limited experimental studies which resulted in inconclusive results due, in part, to the short time spent on each experiment.

There are several observations relevant to interpreting the function of these altered quartzite artifacts that bear mentioning here. Quartzite, as Chadderdon points out, is normally a hard, resistant rock; quartz has a hardness of 7.5 on the Mohs scale and combined with the matrix which has been metamorphosed, produces a durable abrasive for hard surfaces. The fused quartz grains serve much like large crystals in that the rock is not normally conducive to conchoidal fracture but is exceptionally well suited for jobs requiring pecking, battering and abrading-resistant surfaces.

Furthermore, the behaviors that produced the wear patterns were clearly not random although they were not all the same either, as several of Chadderdon's specimens exhibit both battering and abrasion. Judging from her illustrations, the wear patterns on her specimens No. 5, 12, and 29 and the one shown in her Figure 2, C all exhibit matched wear on each face resulting from the user orienting the pebble basically the same each time regardless of which side was grasped.

The functional interpretation that I favor here is that many of the quartzite artifacts described by Chadderdon are hammerstone abrading tools used in preparing platforms during the course of bifacing flint preforms. Chadderdon considered this possible function but her experiments were not intensive enough to replicate the wear. A combination of wear patterns such as battering and abrasion restricted to specific, but patterned surfaces, cannot be replicated in a short period of time with experiments assuming a single trajectory of motor habits and function. The material, size, wear patterns and manner of reduction combined on one specimen is analogous to platform preparation stones utilized by contemporary flintknappers such as Glen Goode of Austin and specimens from my own flintknapping kit. Other prehistoric examples include two reported by Sorrow (1969:39, Fig. 25, G and H) which are described as "an abrader" and a "grooved stone" respectively.

Chadderdon's contribution has brought attention to the occurrence of interesting quartzite tools normally overlooked as insignificant items in most artifact samples. If these artifacts functioned as platform preparation tools, their infrequent occurrence would be expected given the duration of use a tool would have in one's flintknapping kit. Further assuming that at least some of these tools served the interpreted function, even in prehistoric settings, flintknappers probably maintained a tool set for such behavioral characteristics as chipping stone.

In closing, I wish to point out that at times some of the most informative data resulting from replicative experiments is not the intended end product of the experiment but the seemingly inconsequential and fortuitous by-products of the replication process. The function of these quartzite artifacts may not all be the same but many appear to be identical to contemporary platform preparation tools. Once artifacts such as these are placed in a more probable functional context, then their importance toward elucidating the adaptive behaviors at a particular site is enhanced.

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HOWARD D. LAND is an Air Force major who recently returned from Korea and is now stationed in New Jersey. Doug holds an MBA from Eastern New Mexico University. He is both an avocational archaeologist and an avid flint-knapper who is interested in Paleo-Indian studies and lithic technology. He is an active author and has previously published in this journal and in several lithic newsletters. Doug has participated in archaeological activities in Arizona, New Mexico, Texas, and New Jersey.

L. W. PATTERSON is well known to most *La Tierra* readers. He lives in Houston where he is employed by Tenneco, Inc. Active in a variety of archaeological organizations, Lee's most recent activities include presentation of a paper titled "Research Difficulties in Contract Archeology Under Environmental Laws" to the 1978 convention of the American Anthropological Association in Los Angeles, and publication of an article on the "Acceptance of New Ideas in Archeology" in the *Anthropological Journal of Canada,* Volume 16, Number 3:10-13.

E. H. SCHMIEDLIN is a resident of Victoria, Texas who very aggressively seeks to understand and preserve the prehistoric record of his area. He has been a very active member of the Victoria society and has previously published several reports in this journal. Most recently he coauthored the preliminary report of the work at the J-2 Ranch site. "Smitty" is currently working on several additional reports including a note on the presence of *Lerma* points at the J-2 Ranch (where they were earlier erroneously reported as absent).

HARRY J. SHAFER teaches anthropology at Texas A&M University at College Station. Dr. Shafer is an acknowledged authority on the archaeology of central and southern Texas, has been coeditor of the *Texas Archeological Society Bulletin* for the last four years, and is one of the youngest members of the Texas society to ever receive a 20-year membership certificate. Harry is currently off exploring the jungles of Belize (formerly British Honduras) working with Tom Hester and a number of others on a previously unexcavated Mayan City.

FRED VALDEZ, JR. is a graduate student in anthropology at the University of Texas at San Antonio. Fred has been very active in STAA and during 1977-1978 served as chairman of the constitution revision committee. Fred has previously coauthored a number of survey reports and technical articles for the Center for Archaeological Research of UTSA.

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Addendum to THE TURTLE CREEK PHASE (Vol. 5, No. 4)

Several reports have been received subsequent to the publication of the October 1978 issue which supplement and somewhat expand the distribution of *Edwards* points. These include:

Atascosa County: near Poteet (R. L. McReynolds, San Antonio

Bexar County: Ashley Site (Fred Valdez, see elsewhere in this issue)
Sites above lake on Polecat Creek (James Iltis collection)

McMullen County: Lagrand Hollow south of Tilden (Ed Mokry, Corpus Christi)
SW of Tilden, Frio River drainage (Brom Cooper collection)

Request for Assistance: *Sabinal* arrowpoints and Metal points

Sabinal - In his La Jita report (BTAS 1971), Hester tentatively defined a new type of arrowpoint which he called the *Sabinal* type. They are described as having "long, narrow, triangular blades, with the lateral edges often deeply convex to recurved. They have heavy barbs (often bulbous at the ends), which flare outward and curve up. The barbs often extend down to, and even with, the basal edge. The stems were produced by long, narrow basal notches and expand moderately, with straight to slightly concave bases. (Hester 1971:69)" Hester noted that in addition to La Jita, this point type was observed in artifact collections in the Utopia area (Uvalde County) and in the collection from the J. W. Sparks site (Real County). In an effort to better define the regional distribution of these arrowpoints, STAA members who know of *Sabinal* points are encouraged to report site locations and to provide drawings or photos of these arrowpoints. A summary of the information collected will be published in a future issue of *La Tierra*.

Metal arrowpoints - Another type of arrowpoint which is poorly reported in South Texas is the metal point; some are known from excavations at the San Antonio missions and a few have been reported in private collections. However, metal arrowpoints remain one of the least reported and most poorly understood types of artifacts. STAA members who have metal arrowpoints in their collections or who know of sites where metal arrowpoints have been found, are encouraged to report these to the editor along with suitable drawings or photographs. When sufficient documentation is collected, a summary of the information will be published in an article for this journal.

INFORMATION FOR AUTHORS

Articles dealing with the archaeology or ethnology of Southern Texas and adjacent areas are invited. Short articles dealing with specific sites, with types of artifacts, or with archaeological ideas (phases, periods, relationships with historic Indian groups, etc.) are preferred; see the articles in this issue for examples. Priority for publication will be given to original works; however, some reprints of previous work will be used, particularly when they were originally published in journals not readily available in South Texas.

Manuscripts can be submitted in any form (handwritten, printed, typed, etc.) although double spaced typed drafts are preferred. We understand, however, that typewritten material is not possible for everyone and will gladly work with whatever you choose to submit. To protect your work and to protect *La Tierra*, you are encouraged to make a copy (Xeroxing is available almost everywhere) of your work. That way, if your manuscript is misplaced or lost in the mail, it can still be used without having to rework the material.

All manuscripts should be acknowledged within a week or two of receipt. If you do not receive a note indicating that your manuscript has been received, please write or call.

Illustrations are key to most articles. Good illustrations can do much to communicate the significance and beauty of your materials, and will permit other researchers in the future to have a good idea of your material. Always include a scale (preferably metric) in your illustrations since the size of the reproduced copy may not be exactly life size. Please do not write or type on illustrations; note your captions and lettering on a separate sheet. This will permit the lettering and captions to be added in a type style consistent with the other material in the issue. Ed Mokry uses a system of doing his drawings, making a xerox, and then typing in captions and specimen designations (lettering) on the xerox copy; this leaves the original clean for use in final preparation of the journal.

Black and white photos will be used as funding permits. However, each photo plate costs an extra thirteen dollars so that the number of photos which can be used is limited. Authors who submit more than one photo should be prepared to help defray the extra cost of publication. Please do not cut up your photos or paste them on sheets with anything except rubber cement; this complicates our preparation of final publication copy.

Authors will receive two extra copies of the issue in which their article is published. These will be mailed after the regular mailing to STAA members has been completed.