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THE ADAMS SITE: A PALEOINDIAN MANUFACTURING AND HABITATION SITE IN CHRISTIAN COUNTY, KENTUCKY

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ABSTRACT

This paper discusses the manufacturing of chipped stone tools at the Adams Site (15Ch90), a single component, Paleoindian habitation site in Christian County, Kentucky. Analysis of this assemblage indicates that the site's occupants made exclusive use of the local Ste. Genevieve chert, which outcrops above the Little River adjacent to the site. Despite the abundance and availability of this chert, the occupants of the site were highly economical in their use of lithic resources. In comparison to other Paleoindian sites in the eastern United States, the Adams Site most closely resembles the Wells Creek Site in Tennessee. The Adams Site, however, appears to represent a single occupation, while major habitation sites such as Wells Creek seem to have acquired their larger size through seasonal reoccupations.

INTRODUCTION

The Adams Site (15Ch90) was the first single component Paleoindian site discovered in Kentucky and has provided one of the few "pure" assemblages of Paleoindian tools known from the eastern United States. The importance of the assemblage is that detailed description of Paleoindian artifacts, other than finished projectile points and certain culturally diagnostic flake and blade tools, are rarely available. The majority of Paleoindian assemblages described in the literature are from multiple component sites, in which Paleoindian materials have been separated from later components on the basis of typology or differential utilization of natural lithic materials.

The Adams Site assemblage affords a unique opportunity to examine the complete sequence of Clovis point manufacture, from procurement of the chert through various blank and preform stages, concluding with the fluting and edge grinding of the point. In addition to the fluted points, the assemblage contains stone hammer percussors for fracturing flint, gravers and spokeshaves for bone and wood working, and a variety of scraping, cutting, chopping, shredding and planing tools used in the daily routine of procuring food, clothing and shelter.

SITE DESCRIPTION

Environmental Setting

The Adams Site is located southwest of Hopkinsville in Christian County (Figure 1). It covers an area of approximately 1.2 hectares, partially encircling a sink hole and extending over the crest of a low hill which overlooks the Little River to the northeast. This portion of Christian County lies within the western Pennyroyal area of the Mississippian Plateau. Topographically, it has been described as a maturely dissected, but gently rolling plateau or upland plain (McFarlan

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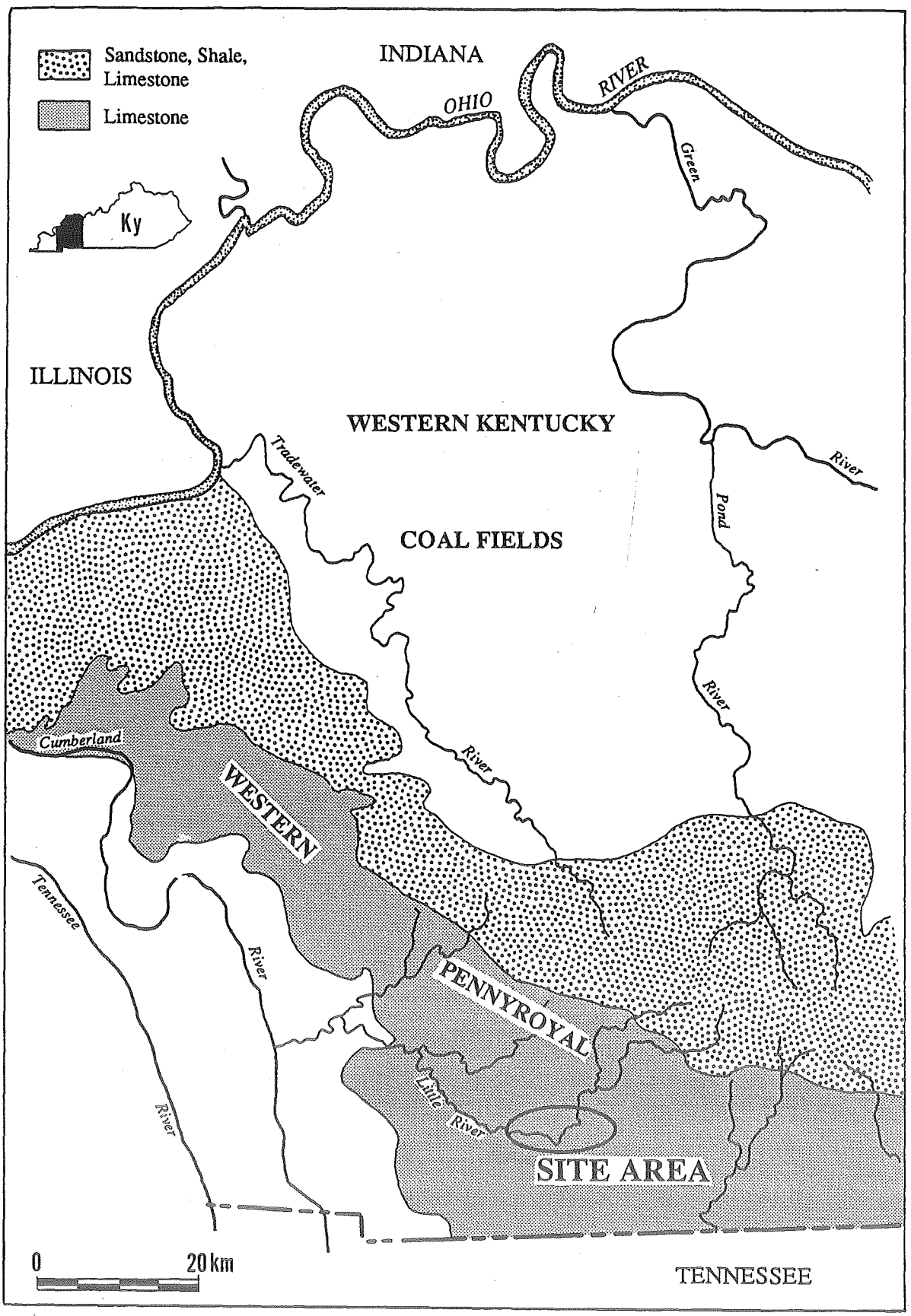

Figure 1. Physiographic Regions of Western Kentucky.

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1943:184-185). This is a heavily karstic area with numerous limestone sinks and caves.

The soil of the Adams Site is eroded Pembroke silt loam (Soil Conservation Service 1979). This is a deep, well-drained, moderately acid soil. Its plow layer is partly subsoil. Cultivation of this soil (with 6 to 12% slopes) presents a severe erosional hazard, but produces high yields.

The Adams Site is underlain by Mississippian period Ste. Genevieve Limestone. Other than alluvial deposits of Quartenary age along the Little River, no other geologic units are exposed in the immediate vicinity of the site. In the limestone cliffs above the Little River 300 m west of the Adams Site, a zone of nodular and bedded Ste. Genevieve chert is well exposed. Also, in the banks and bed of the Little River nearest the site, nodular Ste. Genevieve chert is abundantly available.

Recent History

The Adams Site was first discovered in the mid 1950s by Mr. Hugh Dossett of Hopkinsville, who collected a small number of fluted specimens from its surface. The site lay in pasture until it was next plowed in the spring of 1977. At that time, it was examined by Mr. Carl Yahnig, a Hopkinsville school teacher and acquaintance of Dossett. Yahnig was greatly impressed by the site's numerous fluted specimens, large spalls, blades, and blade cores. Most importantly, he recognized its significance as a single component site, reported his discoveries to the Kentucky Heritage Commission, and made a donation of his site collection.

Between May and November of 1977, the Heritage Commission obtained additional surface collections. Because of inclement weather, these were taken without horizontal control. Subsurface testing was not allowed by the property owner. The site has been briefly described in a county survey report (Sanders and Maynard 1979) and was the subject of a Master's thesis at the University of Kentucky (Sanders 1983). Since 1978, Mr. Yahnig has continued his intensive surface collecting of the Adams Site, and has amassed a substantial collection in addition to the materials studied by Sanders.

LITHIC TECHNOLOGY

Procurement

The lithics from the Adams Site were closely examined and visually compared to a collection of western Kentucky chert types collected from geologic contexts (Gatus 1979). This comparative collection was supplemented with geologic specimens of locally available chert resources, as well as additional chert samples from Tennessee, Indiana, and Missouri.

The results of this analysis demonstrated almost exclusive use of the locally available Ste. Genevieve chert at the Adams Site. Of the entire collection (n = 1,333), including artifacts as well as debitage, only two implements are present which were manfactured from material other than Ste. Genevieve chert. These include a finished Clovis fluted point fragment of Dover chert, and an anvil/abrader manufactured from a sandstone cobble.

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Ste. Genevieve chert is fine grained, fossiliferous, layered, vitreous, and dolomitic. It occurs in nodules from 2.5 to 20 cm in diameter, spheroidal masses, or tabular beds 5 to 30 cm in diameter. Colors range from black to light grey or white. The Ste. Genevieve chert at the Adams Site is represented by both nodular and tabular examples. The nodular form was used far more frequently than the bedded or tabular varieties. This is supported not only by examining the core types and debitage, but by inspecting the bifaces themselves.

The nodular Ste. Genevieve chert commonly displays concentric banding. Such banding does not develop in the tabular form. The presence of concentric banding thus can be used to unequivocally demonstrate the nodular origins of various specimens, even those in advanced stages of reduction. However, since not all nodules show concentric banding, the absence of this feature cannot be used to infer a tabular origin for a particular artifact.

The manufacturing of chipped stone tools began after the local Ste. Genevieve chert had been acquired and transported to the site. All raw materials appear to have been taken directly to the site with little or no modification at the point of collection. Evidence for heat treating, either before or during reduction, is absent, although a very few lithic pieces show damage from heat, perhaps from being discarded in a hearth.

OBTAINING THE BLANK

The first stage of the reduction sequence is obtaining the blank for the tool. For many simple flake and blade tools, the blank may have been obtained by merely selecting a suitable piece from among those discarded during previous flint knapping episodes. Such a flake could be used as found or improved for a specific task by the application of retouch.

Core Types

Some flake tools required specific blank forms. In those cases, specialized core types and knapping techniques were used to systematically produce the desired blank. Some of the core types represented in the assemblage are bi-directional block cores (Figure 2a), polyhedral blade cores (Figure 2b-c), conical unidirectional blade cores (Figure 2d), spherical cores with random flake removals (Figure 2e), spherical blade cores (Figure 2f), and biface cores (Figure 2g).

UNIFACIAL TOOLS

Flakes and blades served as blanks for a wide variety of unifacial tools. During analysis, unifacial tools were classified by the nature and location of edge retouch. Flakes and blades exhibiting lateral retouch were termed side scrapers (Figure 3a-d), while those with proximal or distal retouch were classified as end scrapers (Figure 3e-h). Combination side/end scrapers also occur (Figure 4a-b), and simple unifacial tools, such as gravers (Figure 4c-e), spokeshaves (Figures 4f-h), and beaks (Figure 4i-j) are common.

A very specialized scraper well represented in the assemblage is one based on the ends of broken blades and flakes (Figure 5a-b). The trans-

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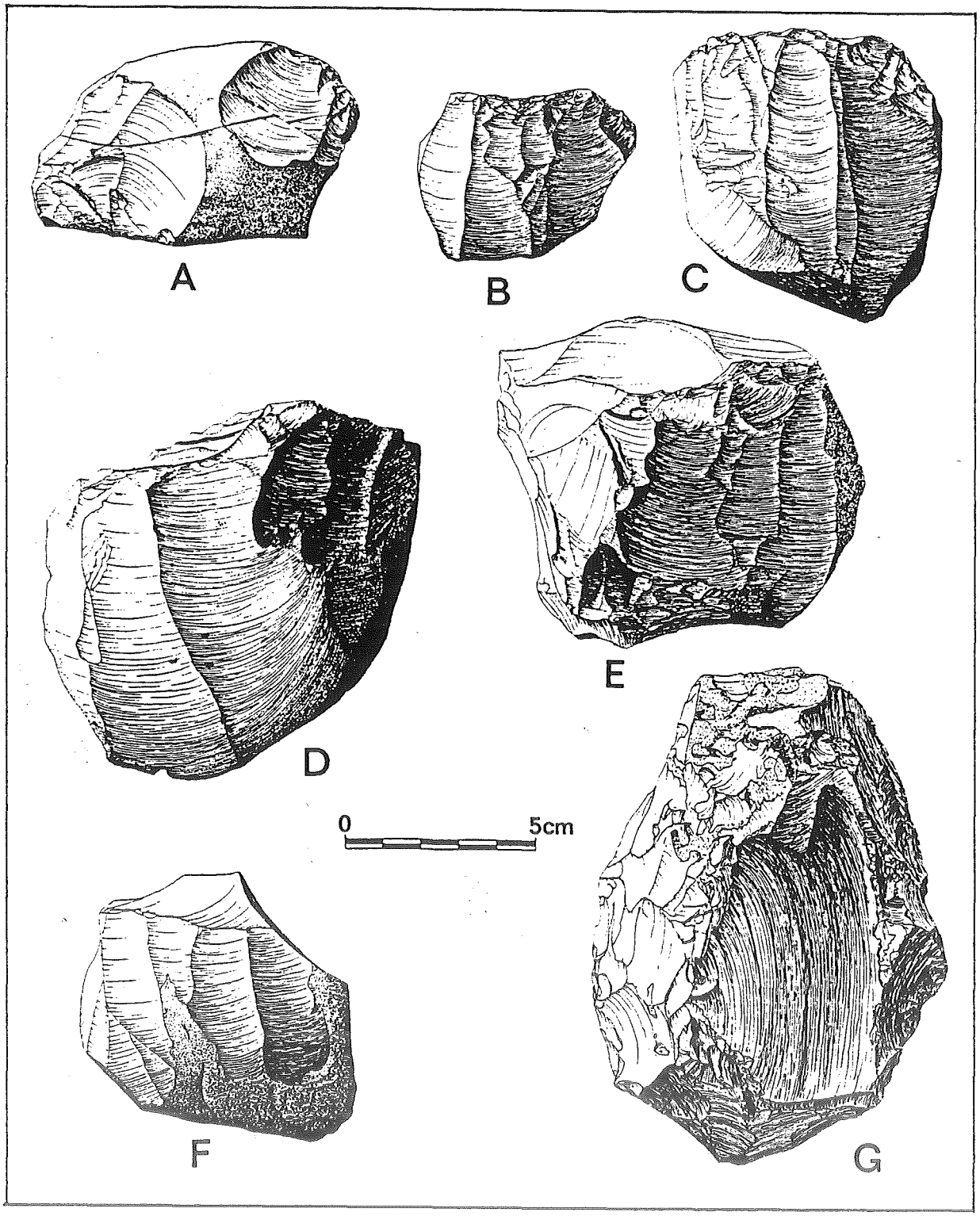

Figure 2. Core Types from the Adams Site: a, bidirectional block core; b-c, polyhedral blade cores; d, conical unidirectional blade core; e, spherical core with random flake removals; f, spherical blade core; g, biface core.

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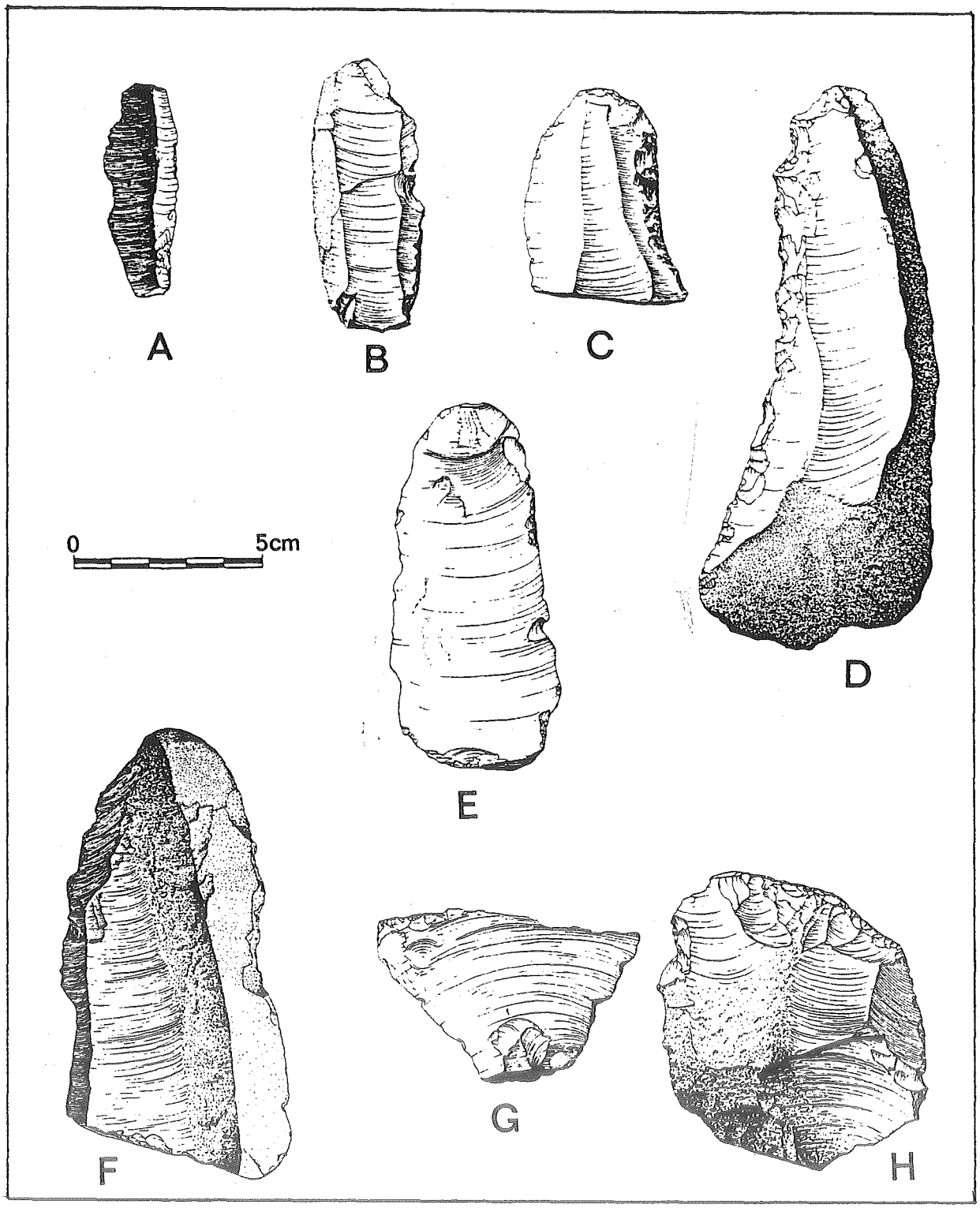

Figure 3. Unifacial Tools from the Adams Site: a-d, side scrapers; e-h, end scrapers.

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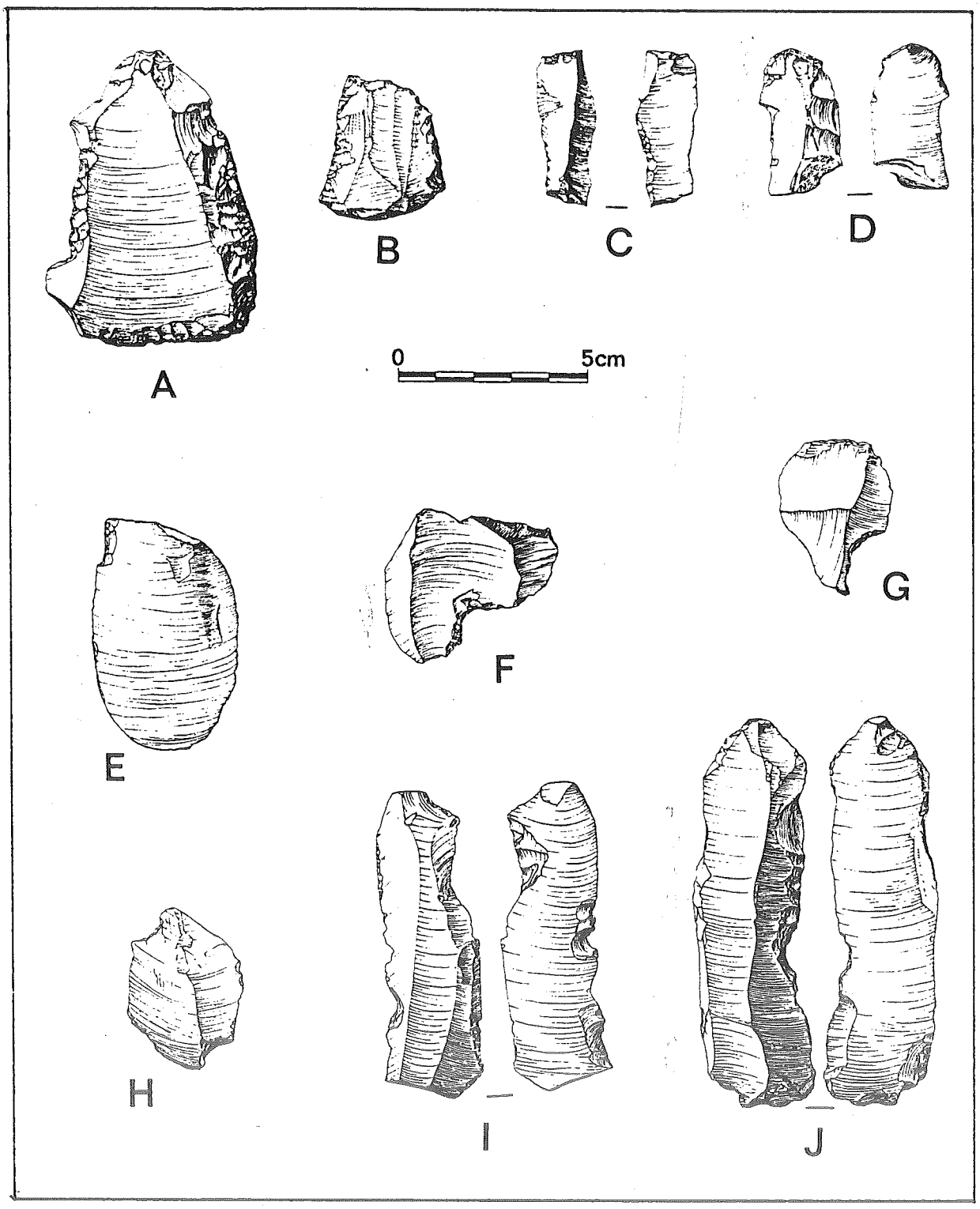

Figure 4. Unifacial Tools from the Adams Site: a-b, combination side/end scrapers; c-e, gravers; f-h, spokeshaves; i-j, beaks.

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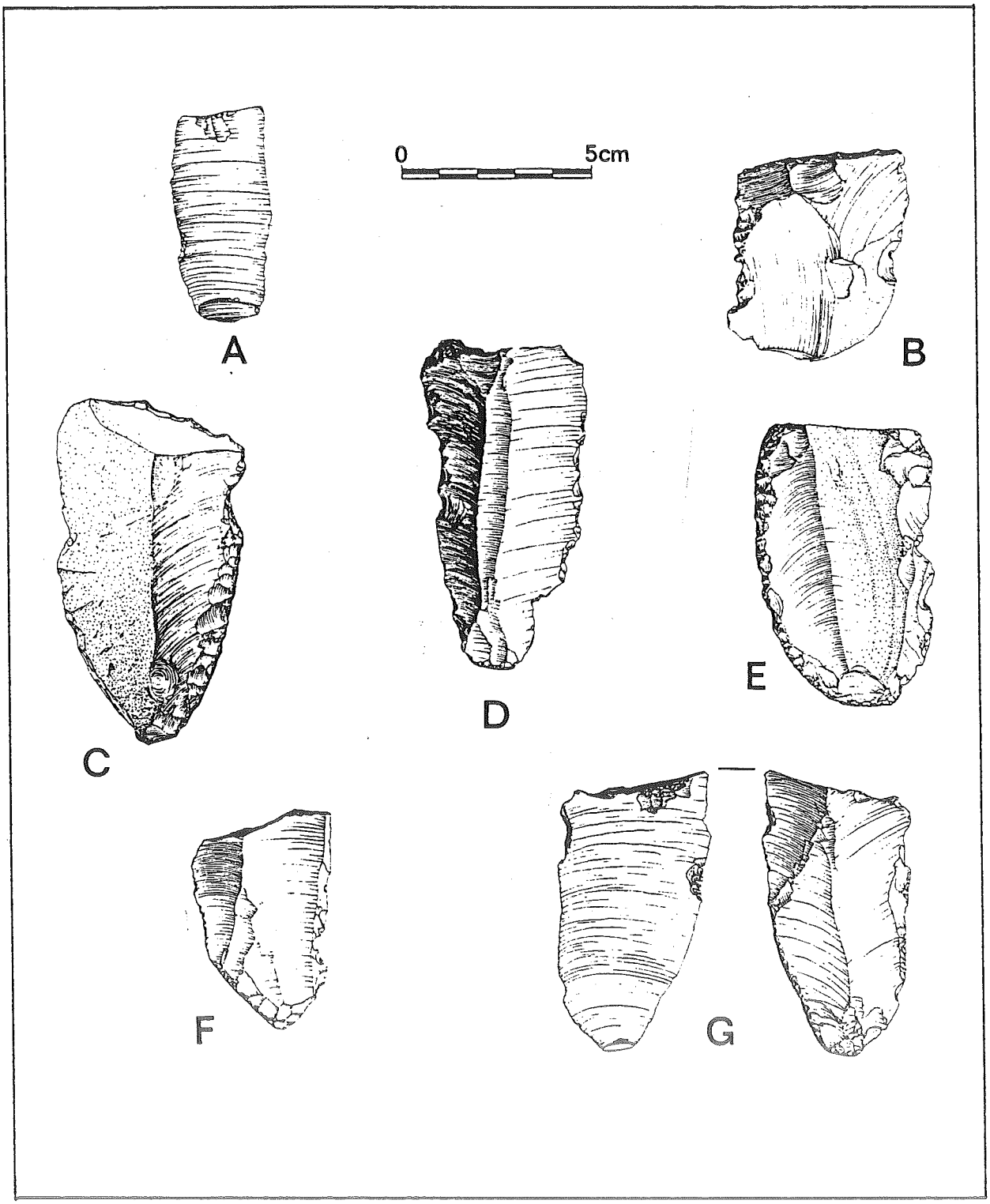

Figure 5. End Scrapers from the Adams Site: a-b, on broken flakes and blades; c-g, with tappered or trimmed stems.

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verse fracture edges commonly display retouch, and use wear is especially noticeable at the corners of fracture edges. These specimens occur in sufficient numbers to indicate deliberate snapping of the blade. Variations of this tool which occur rather commonly in the assemblage are broken blades and flakes having tapered or trimmed stems (Figure 5c-g). These end-of-blade scrapers were most likely used with a short haft.

BIFACIAL TOOLS

The blank form for bifacial tools at the Adams Site was generally a large spall (Figure 6a). Although it is more difficult to determine, bifacial cores were also reduced into bifacial tools. The sample of spalls analyzed are, with few exceptions, rejects (Figure 6b) found unsuitable for bifacing due to various problems such as excessive curvature or extensive cortical areas. The discussion will now turn to the actual biface reduction sequence, which included Stages 2 through 6 in the analysis.

Stage 2 - Initial Edging of the Blank

In Stage 2, the blank was given its initial edge (Figure 7a-c) by detaching flakes which span less than half of the biface width. Flake scar intervals tend to be wide and variably spaced. Deeply gouged flake scars and a high incidence of step fractures (Figure 7d-e) indicate that most Stage 2 bifaces were fabricated by stone hammer percussion. End thinning occurs in this stage, and continues throughout the entire reduction sequence. Overshot terminations resulting from end thinning (Figure 8a-c) are common, and provided the basis for a favorite Adams Site tool, a hafted (?) bifacial end scraper.

Stage 3 - Primary Thinning of the Blank

During Stage 3, the biface was given a lenticular cross section by striking flakes from the edge up to or slightly beyond the biface center which met or slightly undercut flake scars from the opposite margin. Flake scar edge intervals are closer and more regularly spaced than on Stage 2. The appearance of flake scars with feather edge terminations, the low incidence of gouging, and a decrease in crushed and collapsed edges indicates that Stage 3 flaking was accomplished primarily by billet percussion. Failures during Stage 3 are related to the formation of step fractures and deeply hinged terminations (Figure 8d-e), overshot terminations (Figure 8f), fractures during lateral thinning (Figure 8g), and material flaws (Figure 8h-i; 9a).

Stage 4- Secondary Thinning of the Preform

In Stage 4, secondary thinning is accomplished as lateral thinning flakes are driven past the biface center, which undercut the opposing flake scars, thus eliminating the median ridge and producing a flattened crosssection. Flake scar morphology indicates the use of billet percussion. Advanced Stage 4 specimens are sufficiently regular in their overall shape that they can be termed "preforms". Fractures during end thinning (Figure 9b-d) and lateral thinning (Figure 9e-g) continue to cause problems.

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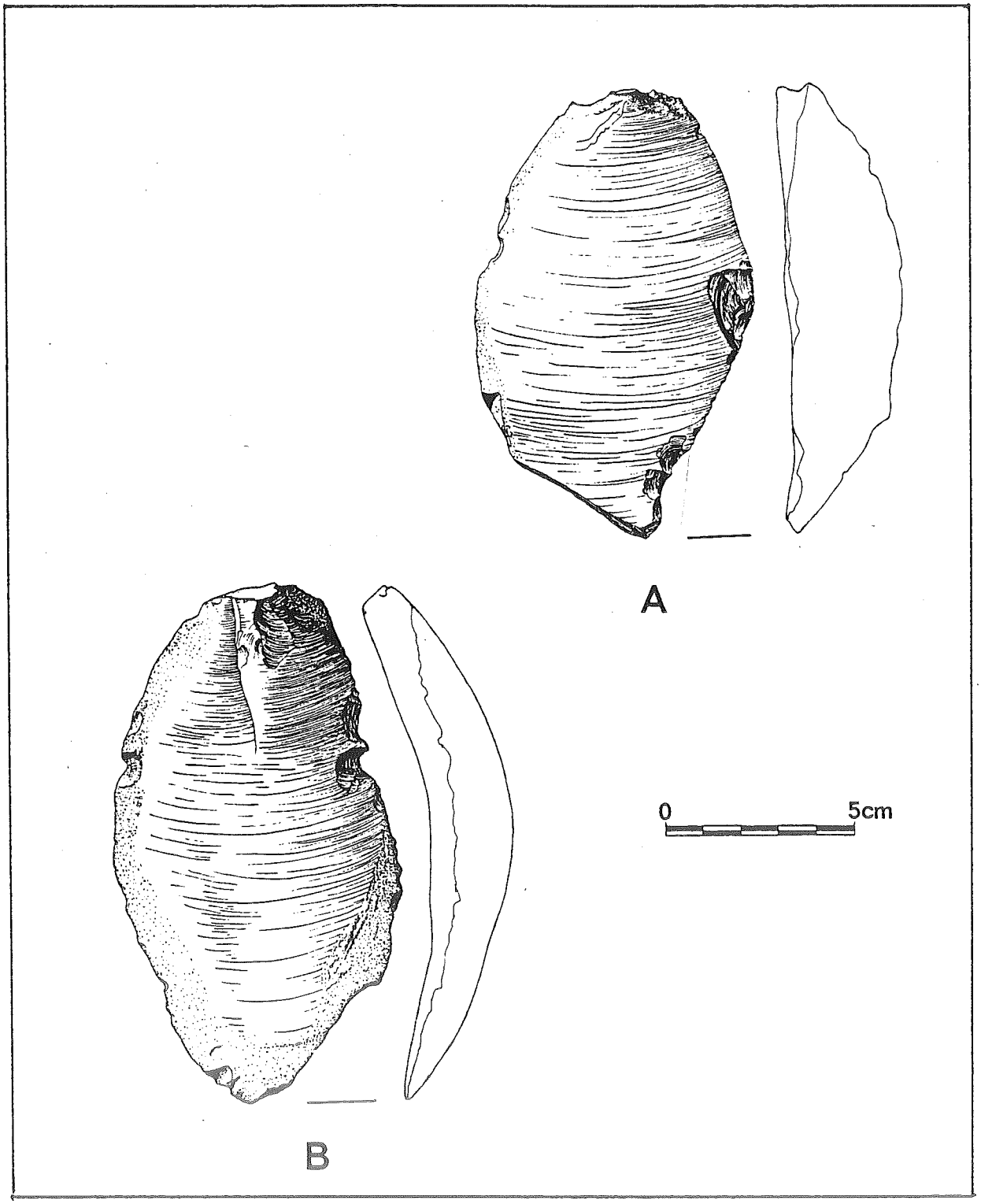

Figure 6. Spalls from the Adams Site: a-b.

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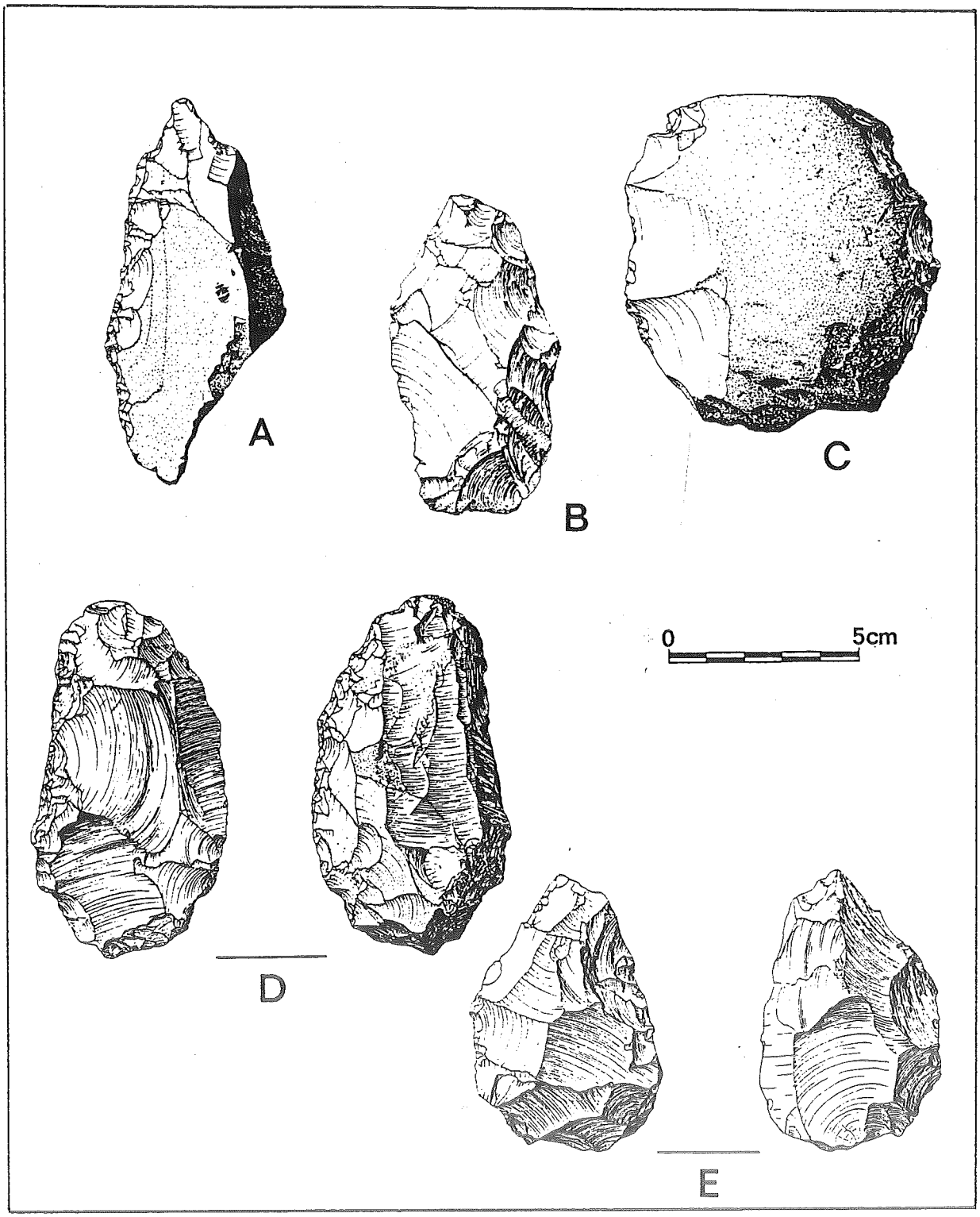

Figure 7. Bifaces from the Adams Site: a-e, Stage 2.

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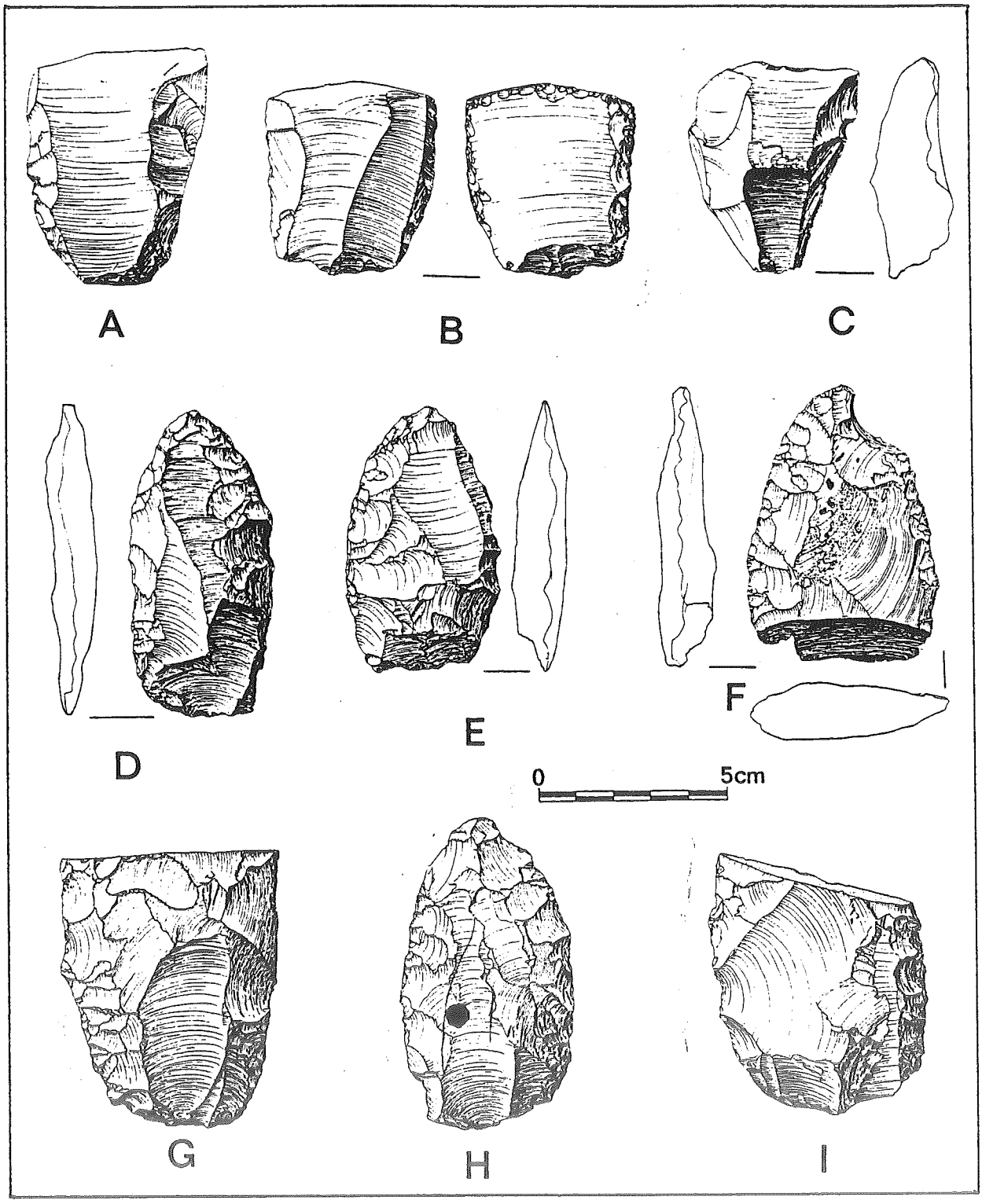

Figure 8. Bifaces from the Adams Site: a-c, Stage 2; d-i, Stage 3.

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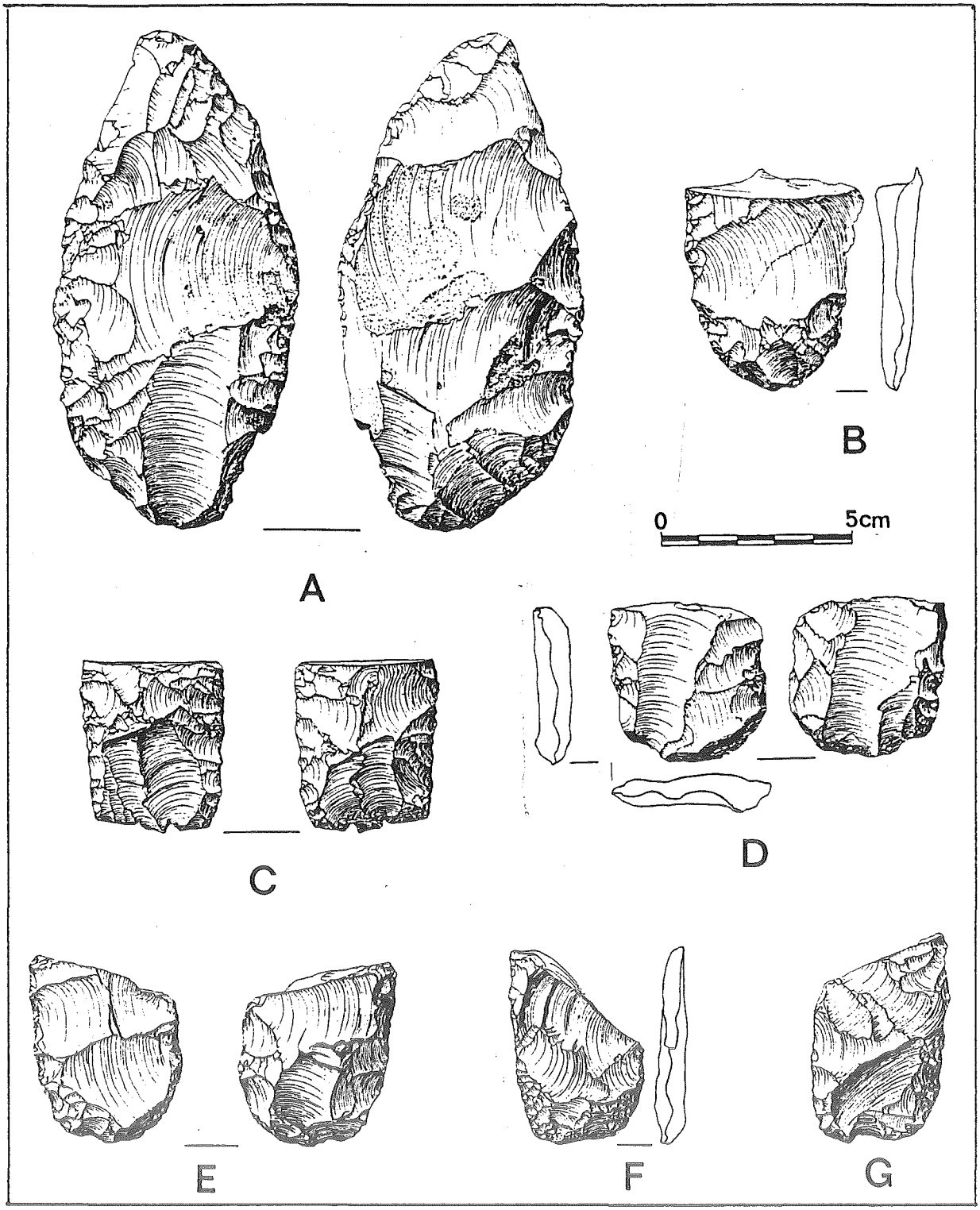

Figure 9. Bifaces fom the Adams Site: a, Stage 3; b-g, Stage 4.

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Stage 5 - Final Shaping of the Preform

The Clovis preform was further reduced in width during Stage 5 and given its final shape through a combination of billet flaking and pressure retouch. For bifacial tools not requiring fluting (Figure 10a), Stage 5 was the end of the reduction sequence. For hafted bifaces such as knives (Figure 10b), the final step was the application of lateral and basal grinding.

Stage 6 - Fluting and Finishing the Preform

During Stage 6 the Clovis point preform was fluted on both faces, further reduced in width, and finished by the application of pressure retouch and grinding of the lower laterals and basal concavity.

A variety of fluting techniques appear to have been familiar to and practiced by the Adams Site flint knappers. These seem to have been employed as needed to overcome individual fluting problems on a given preform. Most commonly, flutes were detached from a beveled or convex base (Figure 10c) with the assistance of a striking platform or nipple. On some specimens (Figure 10d), lateral guide flakes were employed to further isolate the platform or nipple and control the course of the flute as it detached. Variations include fluting from an unmodified, slightly convex base (Figure 10e), or from a wedge-shaped base (Figure 10f). Multiple fluting (Figure 10g) of one or both faces is also represented in the collection. While some (Figure 10f-i) of the specimens show evidence for use of a punch to detach flutes, most appear to have been fluted with a billet.

Stage 7 - The Finished Clovis Fluted Point

Only four specimens in the collection were identified as finished Clovis points. All four are fragments, including two distal ends (Figure 11a-b), one midsection (Figure 11c), and one proximal end (Figure 11d). Surfaces of the point fragments show billet flaking, with their lateral edges showing pressure retouch. Lateral and basal edge grinding is also present on each specimen. The fragment of a Clovis midsection is made of Dover chert, and most likely was brought to the site in a finished condition where it broke during use and was discarded.

Other Bifacial Tools

Other than knives and fluted points, deliberately manufactured bifacial tools are rare in the assemblage. They are limited to a single example of a discodial scraper (Figure 12a) and two examples of "Snub-nosed" end scrapers (Figure 12b-c). One of the two heavy biface tools classified as a scraper plane (Figure 12d) was based on a discarded polyhedral blade core, the other on a narrow biface core.

Discarded bifaces and biface fragments invariably were reused for new purposes. Biface midsections (Figure 12e), tips (Figure 12f), and edge fragments (Figure 12g-i) were especially favored. The retouched edge fragments, in particular the lateral overshot flakes, are some of the most unusual tools from the Adams Site. However, from a techno-logical perspective, the most unique artifact in the assemblage is a

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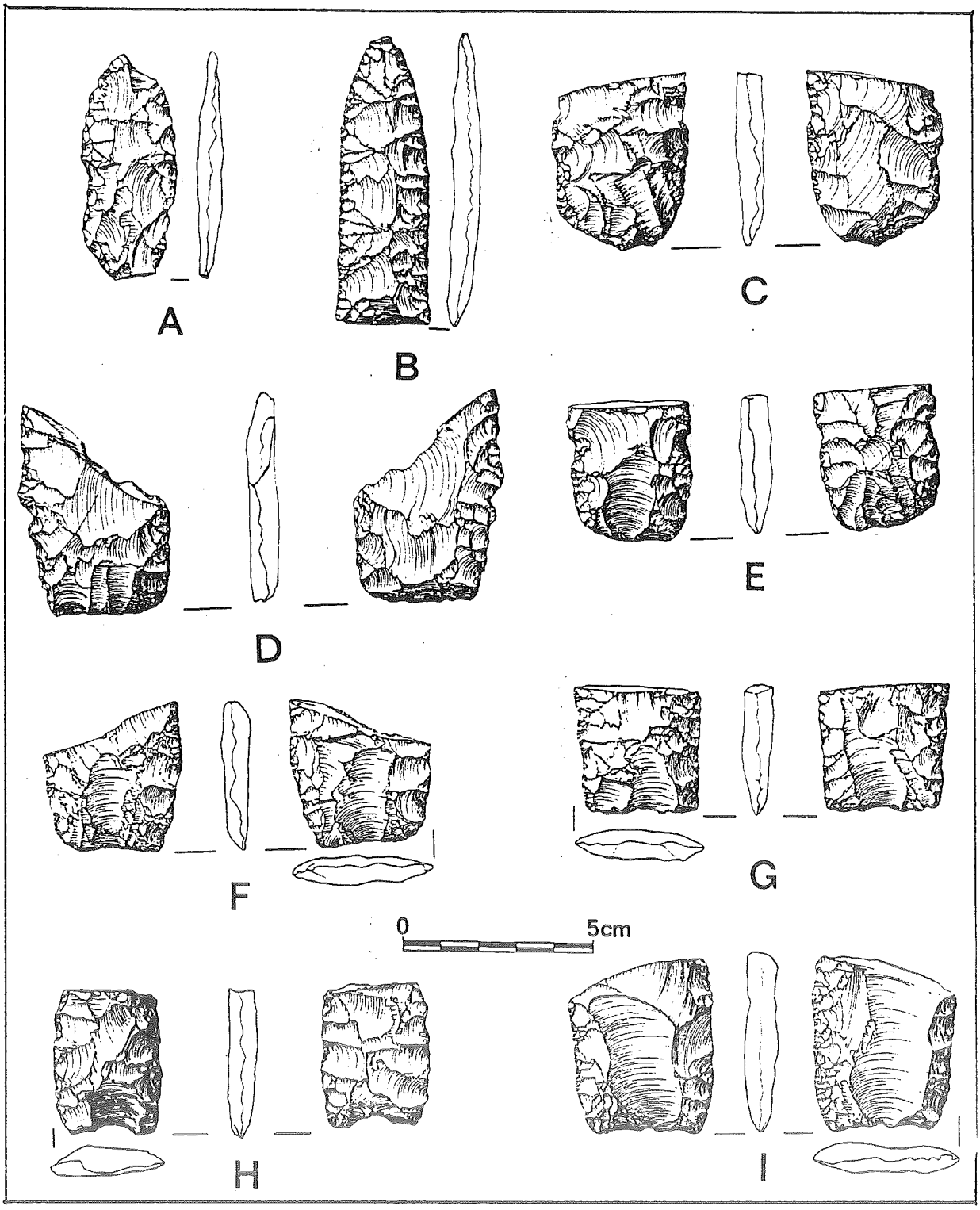

Figure 10. Bifaces from the Adams Site: a-b, Stage 5; c-i, Stage 6.

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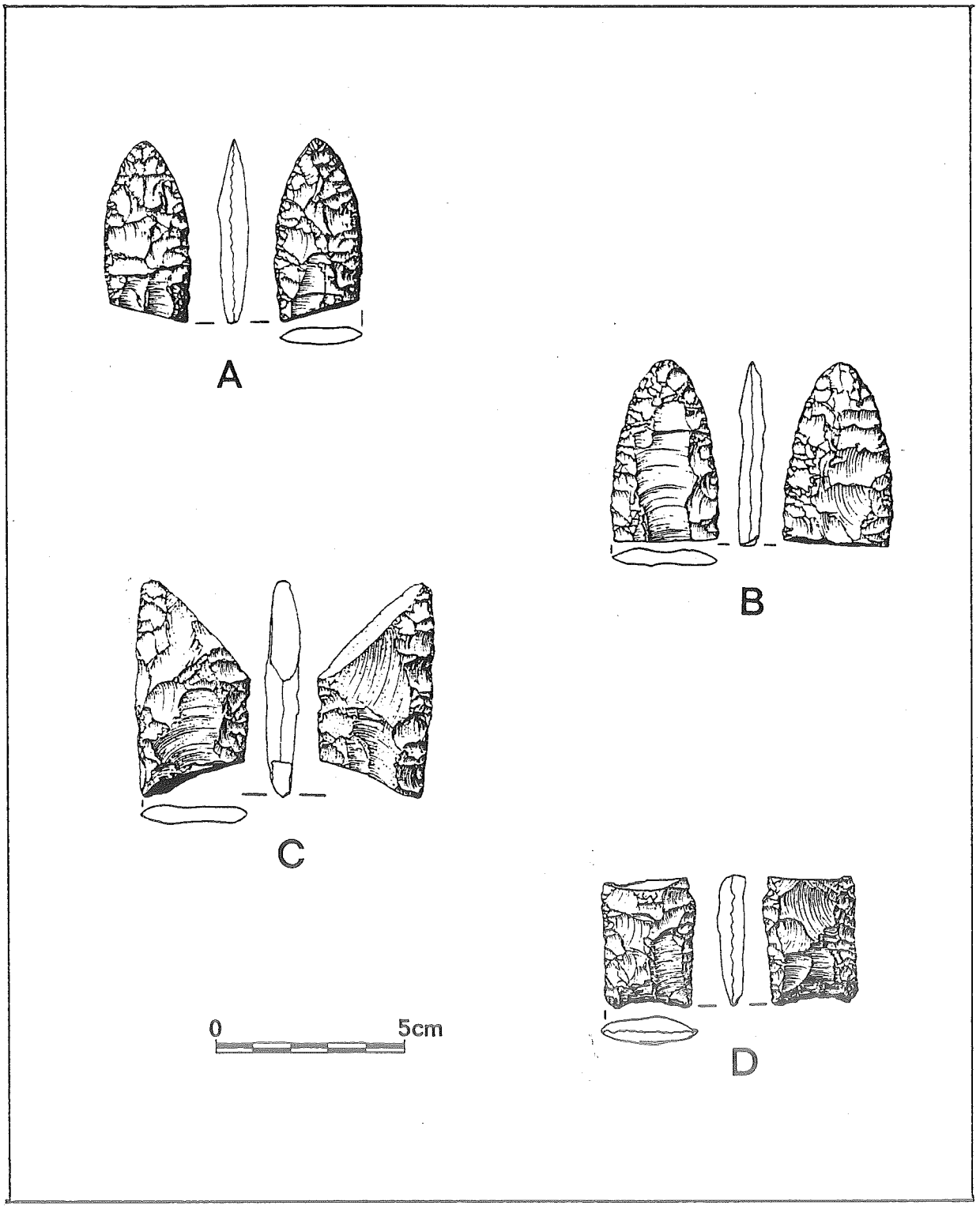

Figure 11. Clovis Projectile Point Fragments from the Adams Site: a-d, Stage 7.

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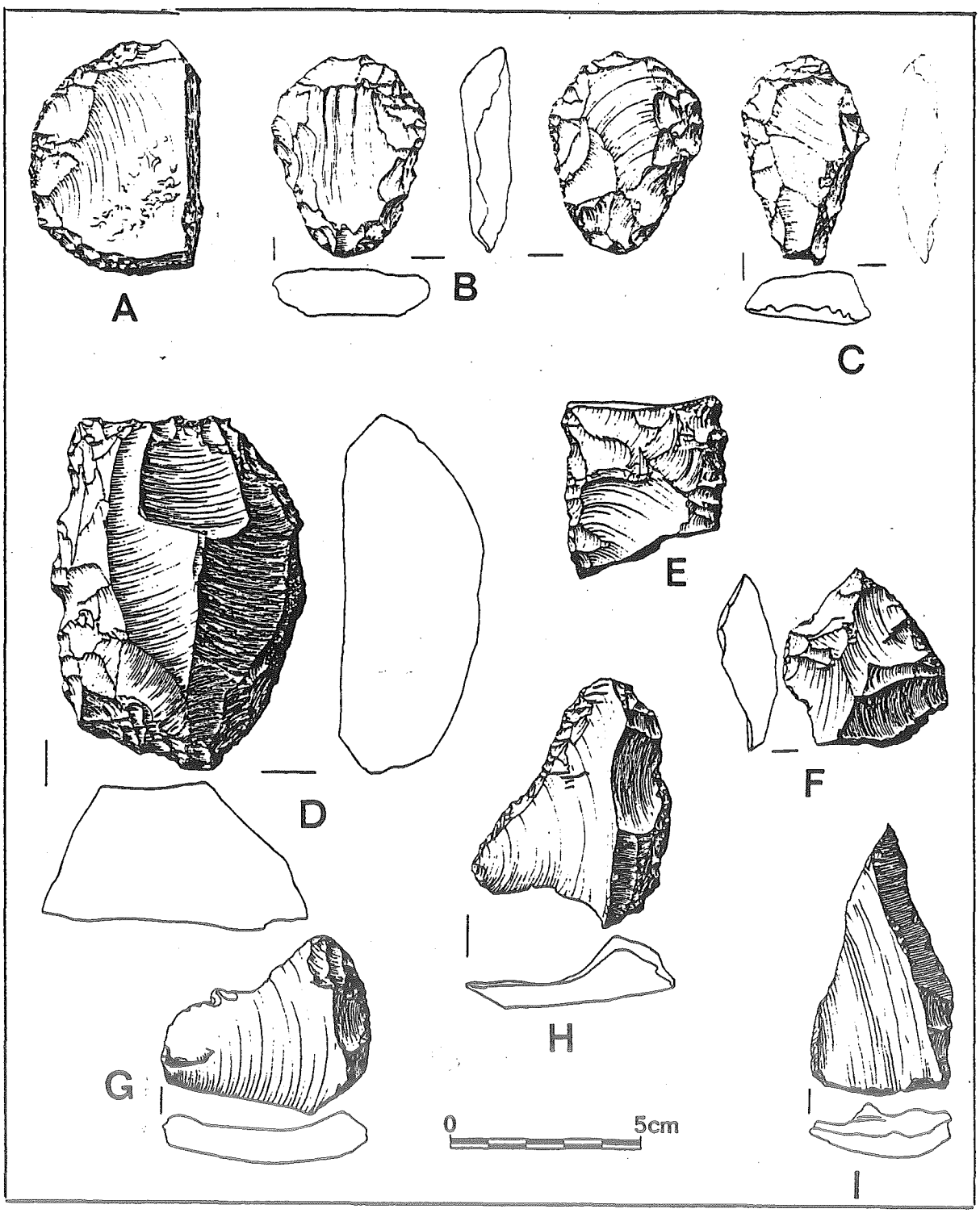

Figure 12. Miscellaneous Bifacial Tools from the Adams Site: a, discoidal scraper; b-c, end scrapers; e, retouched midsection; f, tip; g-i, edge fragments.

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multiple purpose tool (Figure 13a) based on a distal end thinning overshot fracture, displaying a lateral beak and scraper retouch.

MISCELLANEOUS SPECIMENS

End Thinning Flakes and Channel Flakes

Only a small sample of end thinning and channel flakes were recovered (Figure 13b-g). Several show retouch at their distal ends.

Hammerstones

Two chert hammerstones are represented in the collection. One of these (Figure 14a) is a battered chert nodule, the other (Figure 14b) is a blade core with heavily battered ridges.

Anvil/Abrader

This is a split sandstone cobble, flaked on one side and bearing the natural cortex on the other (Figure 14c). Its edges are heavily ground, and it displays both pits and linear abrasions. This specimen most likely was part of a flint knapper's tool kit, possibly used to dull striking platforms and to grind edges. The sandstone material was not locally available, and no other examples of this lithic resource are represented in the collection.

CONCLUSIONS

In conclusion, the Adams Site appears to represent a single, but intensive, encampment of Paleoindian peoples. One of the most noticeable characteristics of the site is the continuous, dense distribution of tools and debitage over its surface. The boundaries are distinct, and there is almost no lithic scatter beyond the site proper. The possibility of reoccupation over extended periods is not supported by the analysis. The lack of variability in chert resources and the uniform technological practices represented in the assemblage all argue against such an interpretation.

The locality seems to have been selected for occupation because of its proximity to a major exposure of Ste. Genevieve chert along the Little River. This resource is abundant, easily accessible, and of good quality, although material flaws are rather common.

The analysis supports the interpretation of the Adams Site as both a manufacturing site and a base camp. The focus of industrial activity was the manufacturing and hafting of Clovis fluted points. In addition, flakes and true blades were produced which served as preforms for other tools. Many of these flake and blade tools may also have required hafting. Although the assemblage as a whole is dominated by the products and by-products of bifacial tool manufacturing, over 60% of all recovered tools are processing implements relating to domestic activities (Table 1).

Functionally, the Adams Site is most like the Williamson (McCary 1951), Thunderbird (Gardner 1974), and Wells Creek (Dragoo 1973) sites

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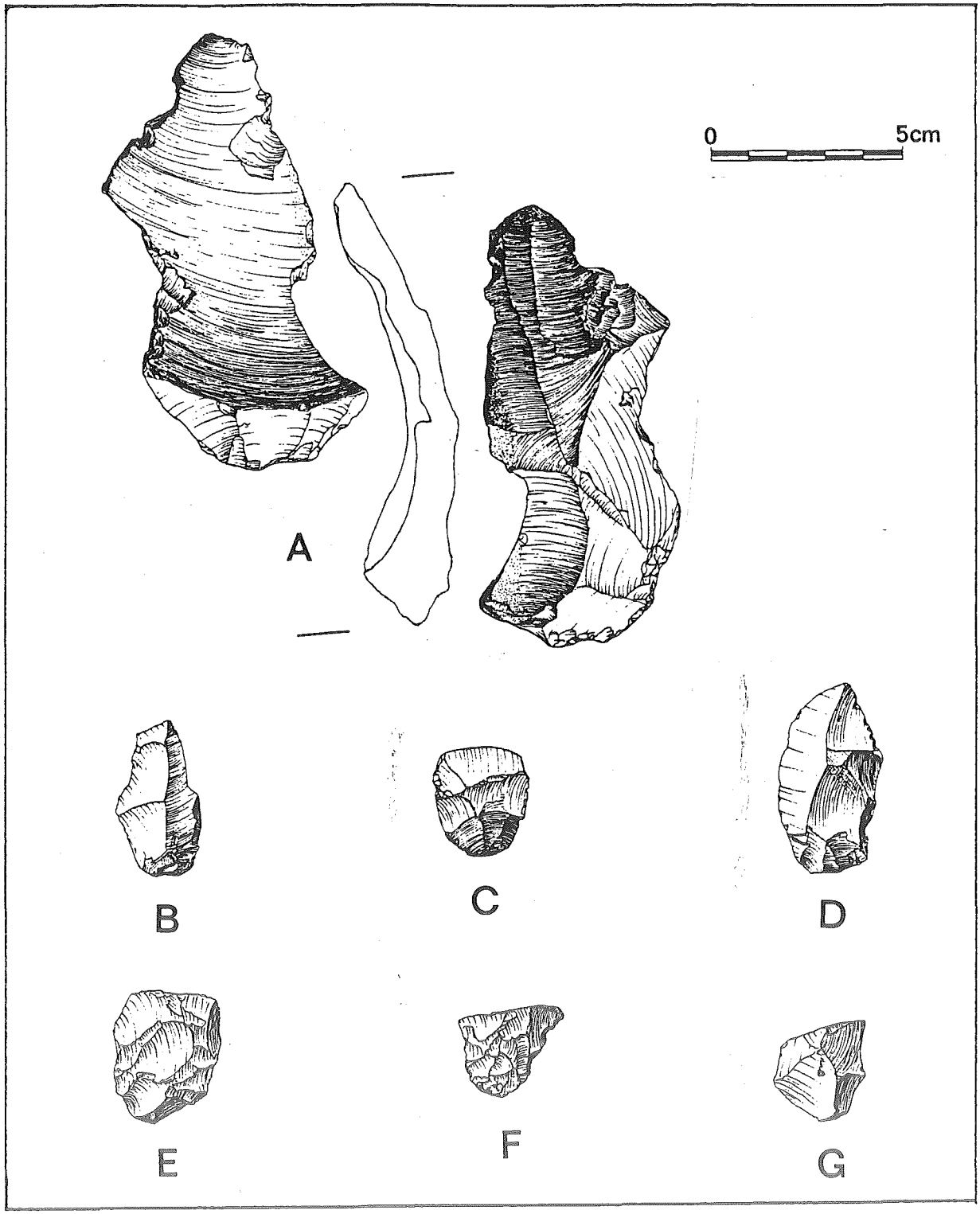

Figure 13. Miscellaneous Tools from the Adams Site: a, scraper on flake with distal end thinning overshot fracture; b-g, end thinning and channel flakes.

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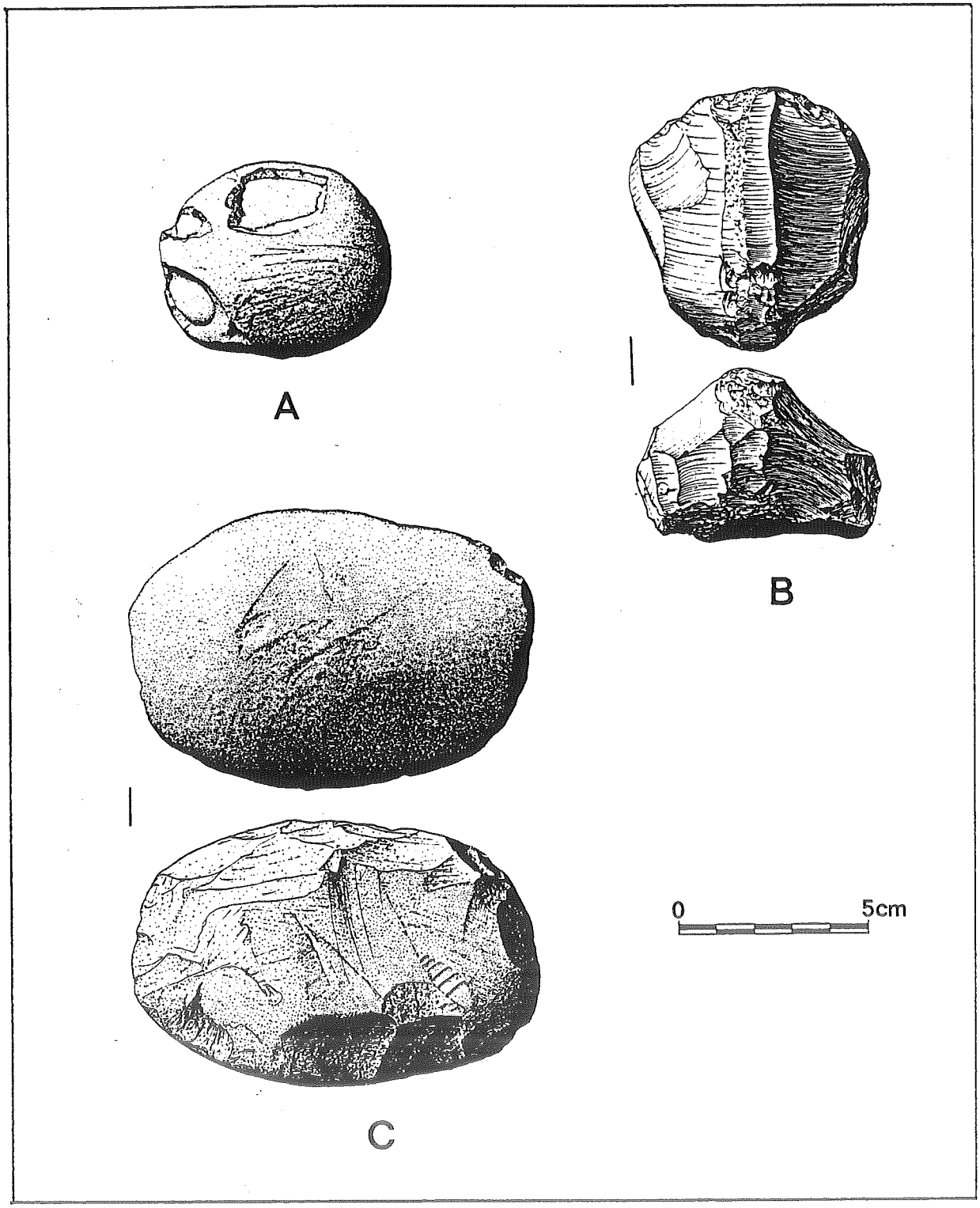

Figure 14. Other Artifacts from the Adams Site: a, battered chert nodule hammerstone; b, hammmerstone made from exhausted blade core; c, anvil/abrader made from split sandstone cobble.

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Table 1. Tool Type and Debitage Percentages for the Adams Site

Artifact Type	No. of Artifacts	% of Assemblage	% of Tools
Cores	39	2.9	5.8
Finished Points	4	0.3	0.6
Misc. Biface Tools	41	3.1	6.1
Bifaces in Progress*	112	8.4	16.7
Unifacial End Scrapers**	137	10.2	20.5
Unifacial Side Scrapers **	166	12.5	24.8
Unifacial Side/End Scarpers**	93	7.0	13.9
Other Flake Tools	70	5.3	10.5
Anvil-Abrader	1	0.08	0.1
Hammmerstones	5	0.4	0.7
Sub-total, Tools	668	50.1%	100.0
Debitage	665	49.9%	
Total of All Artifacts	1,333	100.0%	

* Includes various reworked tools.
** Includes various accessory tools.

(Table 2), which have been interpreted as manufacturing and habitation sites. Adams, however, is unique among the manufacturing and habitation sites in that it is substantially smaller and shows no evidence of multiple occupations. Both physically and technologically, Adams represents a single, intensive occupation.

Many investigators have commented on the great uniformity of tool types between Paleoindian sites, noting that these vary mainly by relative frequencies according to a variety of factors, including site size, function, distance from lithic resources, etc. The Adams Site assemblage, as might be expected, is most similar to assemblages from Williamson, Wells Creek, and Thunderbird (Table 3).

Of these, the Wells Creek and Adams assemblages are almost identical, with the exception that the heavy core and biface tools common at Wells Creek are present, but rare, at the Adams Site. Both Adams and Wells Creek have a profusion of single and combination tools based on flakes and true blades. Accessory tools are also abundant.

Although the overall assemblages of the Thunderbird and Adams sites are similar, there are significant differences. At the Thunderbird Site, there is a low level of lithic economy. Combination and accessory tools are rare, and lithic waste is high.

Lithic technological practices between the Paleoindian sites are remarkably similar, although there are individual, significant differences. Perhaps the most important of these differences is the production

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Table 2. Physical and Functional Characteristics of Paleoindian Sites.

		Adams	Wells Creek	Williamson	Thunderbird	Debert	Shoop	Plenge	Kings Road	West Athens Hill	Bull Brook	Holcombe	Vail
FUNCTION	Quarry									X			
	Workshop	X	X	X	X			?		X			
	Hunting Camp					X	X		X		X	X	X
	Other Habitation	X	X	X	X			?		X			
SIZE	Less Than 1 Acre								X			X	?
	1-5 Acres	X											
	Over 5 Acres		X	X	X	X	X	X		X	X		
FEATURES	Single Occupational Area	X							X				?
	Multiple Occupational Areas		X	X	X	X	X	?		X	X	X	?

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Table 3. Technological Practices at Paleoindian Sites.

	Adams	Wells Creek	Williamson	Thunderbird	Debert	Shoop	Plenge	Kings Road	West Athens Hill	Quad	Bull Brook	Holcombe
Blade Cores	x	x										
Other Core Types	x	x	x		x	x	x	x	x	x		R
Bifaces in Progress	x	x	x	x	x	R		x	x	x	x	x
Beveled Bases	x	x	x			R	x	x	x		x	x
Wedge-Shaped Bases	R		x			x	R				x	
Striking Nipple	x	R	x	x	x	R	x			x	R	x
Guide Flakes	R		x		x	x	x	x	x	x	x	x
Multiple Flutes	x	x	x		x	x	x	x	x	x	x	x
Channel Flakes	x			x	x	R	x			x		x
Ground Margins	x	x	x	x	x	x	x	x	x	x	x	x
Hardhammer Percussion	x	x	x	x	x	x	x	x	x	x	x	x
Soft Hammer Percussion	x	x	x	x	x	x	x	x	x	x	x	x
Indirect Percussion	R	x	x	x	x	x	x					
Bipolar Percussion		x	x	x	x	x	R				x	R
Pressure Flaking	x	x	x	x	x	x	x	x	x	x	x	x
Heat Treating		x	x	x	x	x	x					x
High Lithic Economy	x	x			x	x						
Low Lithic Economy			x									
Local Lithics	x	x	x	x		R	x	x	x	x	R	x
Exotic Lithics		R	R		x	x	x	x	R	R	x	R

R=Rare

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of true blades from blade cores at only two of the sites, Adams and Wells Creek. True blades and blade cores do not occur at northeastern Paleo sites. There are, however, rather uncertain references to the presence of blades at a number of southeastern sites. In addition to occurring at Adams and Wells Creek, blades may be associated with Paleoindian occupations at the Nuckolls (Lewis and Kneeburg 1958) and LeCroy (Lewis and Kneeburg 1956) sites in Tennessee, and the Quad (Soday 1954) and Pine Tree (Cambron 1958) sites in Alabama. The implications of a Paleoindian blade core industry centered in the southeast, but absent in the northeast, are far reaching and bear directly upon the question of the arrival and dispersal of Paleoindian groups throughout the eastern United States.

One of the most intriguing aspects of the comparison of technological practices was that the Adams and Wells Creek sites were highly economical in their use of lithic resources, despite their proximity to quarries and outcrops. At the Adams Site, virtually every sizable scrap of lithic material displays evidence of utilization. Whenever possible broken or rejected bifaces and other implements were reused for new purposes. Further, combination and accessory tools were common at both sites. Those facts contradict the expected behavior for groups possessing easily accessible lithic resources.

At this time, there is no way to determine why the occupants of both the Wells Creek and Adams sites were so conservative in their use of a resource that was abundant and accessible. One possible explanation for this behavior is that the cultural traditions of the group that occupied the Adams Site included a conservative attitude toward the use of lithic resources. Flint knappers working within such a tradition and moving from a situation of limited lithic resources to one of abundant lithic resources might retain their old habits and attitudes.

In summary, the Adams Site was found to be a rather unique, single occupation version of the larger, multiple occupation habitation/workshop sites for which the eastern United States is famous. Of all sites reviewed, Adams was most closely related to the Wells Creek Site of Tennessee, which is located approximately 64 km to the south. The similarities are so striking that both sites could be attributed to the same cultural group.

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