

# The Châtelperronian of Les Tambourets (Haute-Garonne, France): Appendices A-E

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## APPENDIX A

### RACHAT AND OTHER SITES NEAR LES TAMBOURETS

As mentioned briefly in Chapter 1, Section VI, Louis Méroc reported the presence of archaeological materials in sediments of the +30m terrace quite close to the large site of Les Tambourets (“1” on the map in Figure A-1). Three of them are discussed here.

#### I. LA CÔTE DE COULADÈRE (“2” IN FIGURE A-1)

In the east face of the D.8 roadcut at the junction of that road with the old Gensac road, which forms the southern boundary of Area 3 at Les Tambourets, Méroc found Neolithic artifacts in the top of the loess body. Méroc’s brief note on his pencilled sketch map (Figure A-2) contains no further details about this Neolithic material, but it seems likely that it was the same Chassean “Middle Neolithic” found on the surface at Les Tambourets and *in situ* further east at Terssac (Méroc 1948; †Méroc and Bricker 1984). No objects considered by Méroc to be Châtelperronian were found by him at La Côte de Couladère; this suggests that the zone of Châtelperronian occupation at Les Tambourets did not extend this far west.

#### II. TERRIER FERRAGE (“3” IN FIGURE A-1)

Terrier Ferrage (commune de Couladère, Haute-Garonne) is a small Châtelperronian and Neolithic site located on the +30m terrace of the Volp River (Méroc 1963b). It is ca. 200m southwest of the western limit of the much larger Châtelperronian site of Les Tambourets (see Figures A-1 and A-2), from which it is apparently separated by a zone of nonoccurrence of Châtelperronian artifacts. Although mentioned by Harrold (1978: 331) in his inventory of Châtelperronian sites, the only archaeological investigations are those of Méroc, and those of his results that bear on the Châtelperronian derive principally from his study of an existing section in the wall of a “brick-earth” quarry that provided raw material for a tile factory, La Tuilerie Ferrage, in Cazères. The quarry was abandoned shortly after World War II. The standing section (Méroc 1963b: 200, Figure 8), ca. 1.6m high, exposed two different sediments (Figure A-3, left), as follows:

*Stratum 1* (40cm): A very light-colored silty sediment (*limon*) considered by Méroc (1963b: 200) to be, at least in part, a colluvial sediment. Toward its base, this stratum contained some widely scattered ferromanganese concretions. At the very base of the stratum, resting upon the subjacent *Stratum 2*, was an *archaeological level* containing, apparently *in situ*, potsherds and other Neolithic artifacts.

*Stratum 2* (greater than 120cm; base not exposed in the section): A silty sediment (*limon*) of rusty, yellowish-brown color containing widely scattered ferromanganese concretions. Chipped flint artifacts of Châtelperronian type were reported by Méroc to be present in this stratum; they were distributed throughout its thickness, but they were very infrequent. Méroc did not encounter a true archaeological level in *Stratum 2* (*pace* Harrold [1978: 331], who may have mistaken several references to Les Tambourets in Méroc [1963b] for descriptions of Terrier Ferrage), and there is no suggestion that any of the rare Châtelperronian artifacts were *in situ*.

According to Méroc (1963b: 201), the operator of the brick-earth quarry explained that the quarry was never deepened because at some (unknown but probably minimal) depth below the existing floor some trial excavations had encountered an unbroken layer of “*grepp*”, a term used locally for a deposit of densely concentrated ferromanganese concretions (for example, couche C in the Main Area at Les Tambourets). Méroc made the reasonable assumption that the *grepp* reported by the quarry operator, occurring as it did at the base of a silt body containing Châtelperronian artifacts (see Figure A-3, right), was in fact the same deposit encountered on the same Volp terrace only 200m away at Les Tambourets. He explained the presence of the Châtelperronian artifacts, always in secondary context, as the result of solifluction transport from some primary-context site a short distance upslope. (However this may be, the hypothetical primary-context site would *not* be Les Tambourets, which is slightly *downslope* from Terrier Ferrage.) Alternatively, there could be a (not very rich) Châtelperronian archaeological level at the base of *Stratum 2*, not encountered by Méroc and not recognized as such by quarry workmen. Such a level could be the source of widely scattered, derived material found at higher levels, as is the case in couche B at Les Tambourets.

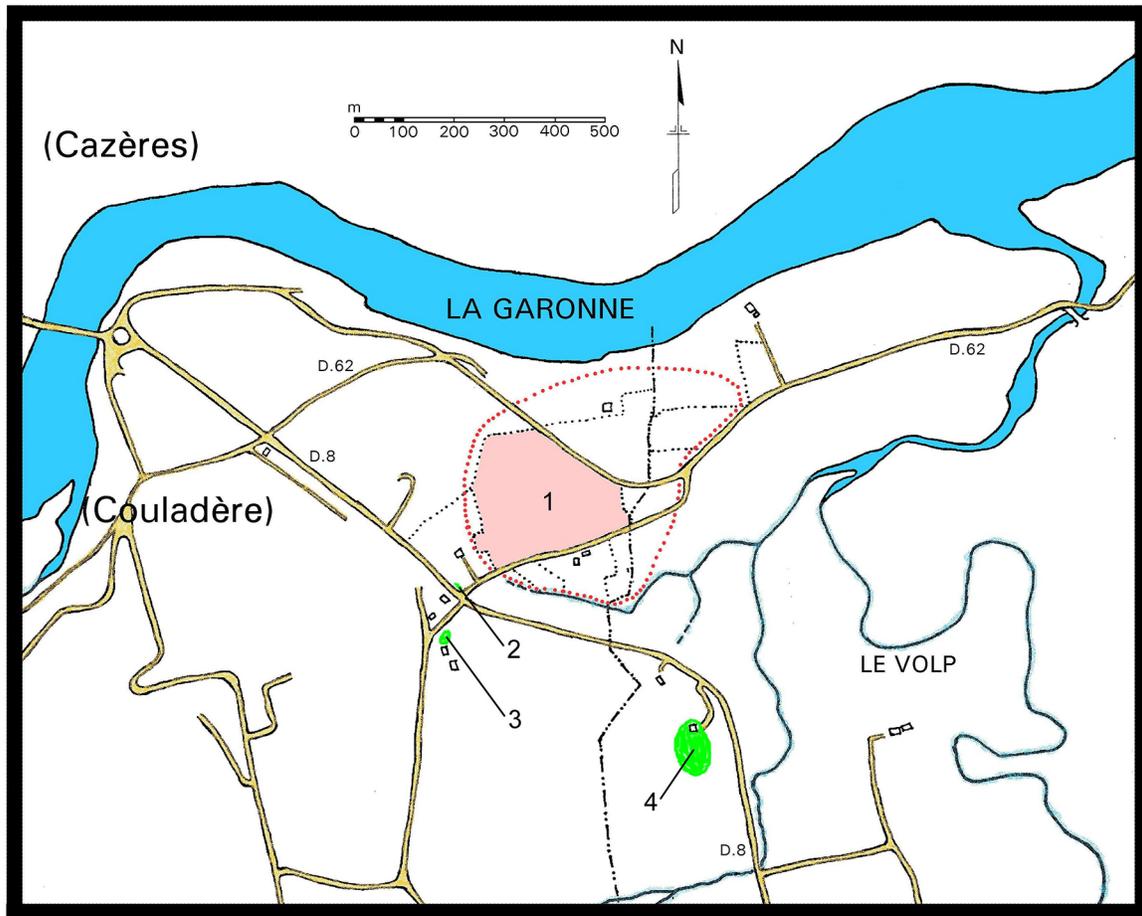


Figure A-1. Archaeological sites on the +30m terrace of the Volp River in the communes of Couladère and St.-Christaud. 1: Les Tambourets; 2: La Côte de Couladère; 3: Terrier Ferrage; 4: Rachat. Locations of roads and structures are as of the 1970s.

In summary, Terrier Ferrage is an undoubted Châtelperronian site, even though no primary-context Palaeolithic materials have yet been excavated from it. A penciled sketch map drawn by Méroc (see Figure A-2) shows two other small *terriers* immediately adjacent to the Terrier Ferrage on the +30m terrace but slightly south and southeast of it. The map's key indicates standing sections containing *in situ* archaeological material at both loci, but there is no indication of the nature of the material. If an undisturbed Châtelperronian archaeological level is preserved at Terrier Ferrage or adjacent to it, such a level has not yet been encountered or described.

### III. RACHAT ("4" IN FIGURE A-1)

Rachat (commune de St.-Christaud, Haute-Garonne) is a small, probably largely destroyed Châtelperronian site on the +30m terrace of the Volp River located ca. 300m south-southeast of the southern boundary of Les Tambourets. Rachats received very brief mention, without artifact illustrations, in several publications of the later 20th century (for example, Bahn 1983: 211; Clottes 1974: 71, 1976: 1215; Laplace 1966b: 204–207; Méroc 1963a: 65, 67–68, 73) as a small site near Les Tambourets that had essentially the same Châtelperronian lithic industry. Although there is a farm called "Rachat" east of the road from Couladère to

Le Plan, D.8, the archaeological site is *west* of that road on a crescentic topographic prominence, the edge of the terrace, that drops off in a steep slope to the east and southeast (see Figure A-2). As such, it "faces" Les Tambourets across the valley of the unnamed stream that forms the southern boundary of Tambourets' Area 2. The results of Méroc's prospecting indicate that Châtelperronian materials are essentially absent from the area between Rachats and Les Tambourets (a distance of ca. 300m). It is perfectly correct, therefore, to regard Rachats as a site separate from Les Tambourets.

There were, then, several discrete areas of Châtelperronian occupation located on the +30m terrace around the upper or western end of a small unnamed tributary of the Volp (see Figure A-1). Les Tambourets, with its rich and complex occupational palimpsest, is on the left bank of that stream. Another probable occupational locus, this time on the right bank, is sampled by Terrier Ferrage. A definite third locus, again on the right bank, is the site of Rachats.

The archaeological context of Rachats is known primarily from the rather large series of lithics collected from the surface by Louis Méroc from the 1920s to the 1950s (as discussed below), but it is not clear how much, if any, of the site remains intact. I visited Rachats in August of 1975, and at that time most of the area within the site boundary in-

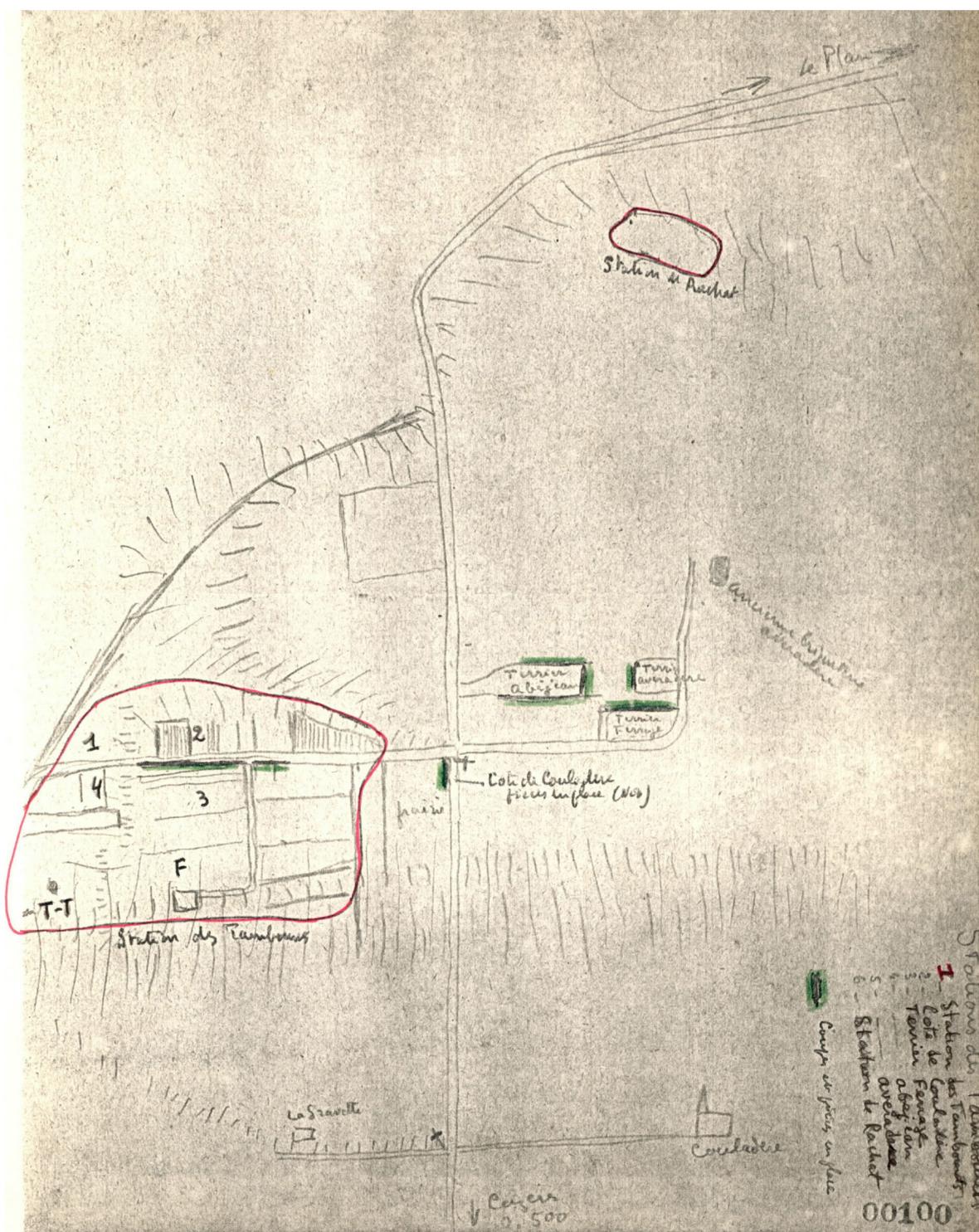


Figure A-2. Sketch map by Louis Méroc showing the locations of archaeological sites on the +30m terrace of the Volp River—Les Tambourets, La Côte de Couladère, Terrier Ferrage and adjacent terriers, and Rachat. The top of the map is approximately south (adapted, with color restored, from a copy of document 100 of the Méroc dossier on Les Tambourets).

indicated by Méroc on his sketch map (see Figure A-2) was pasture land with unbroken ground cover. One small plot, more or less in the center of the area indicated by Méroc, had been ploughed recently (apparently for a garden plot). On the western edge of this ploughed plot, one thick unretouched, rather granular flake was observed. This was

the only artifact seen. A Monsieur Tapiou of Cazères, an amateur prehistorian who surface-collected widely in the region, told me in 1975 that the site of Rachat had been destroyed recently by the construction of a house directly on top of it. Indeed, on what is probably the northern or north-eastern end of the site, a new house, under construction in

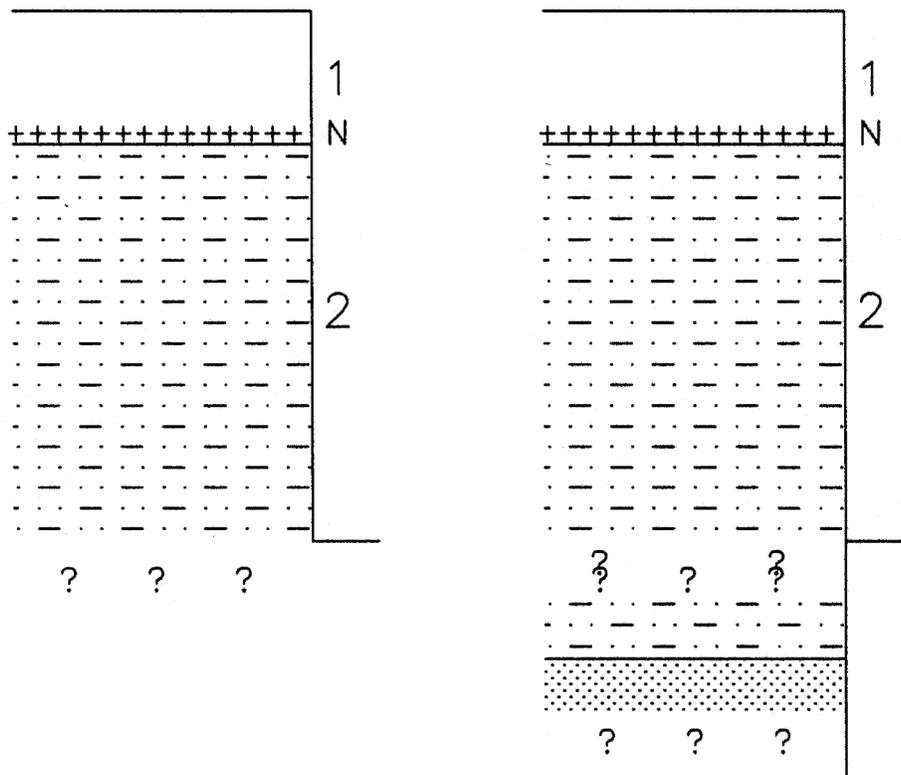


Figure A-3. Generalized stratigraphic sequence at Terrier Ferrage. Left: sketch section of the wall of the brick-earth quarry (after Méroc 1963b: 200, Figure 8); a Neolithic archaeological level, N, occurs at the base of Stratum 1, and Stratum 2 contains rare and scattered Châtelperronian artifacts. Right: hypothetical continuation of the stratigraphic sequence as suggested by Louis Méroc based on the reported occurrence of a level of ferromanganese concretions below Stratum 2.

1973, had been completed and was inhabited in 1975. The inhabitants told me that they built a platform for the house by having the bulldozer dig away the slope to the west and push the ground east to form a flat area. Thus, it is probably true that part of the site was destroyed by this action. Unless an archaeological level is really deeply buried, it is not likely that much or any of the site is still in place.

Over the years, Méroc collected more than 1,800 lithic artifacts from the surface at Rachat. On 11 and 12 August 1959, he and Georges Laplace compiled an inventory of this collection, which Méroc emphasized was the totality of everything he had from Rachat.<sup>1</sup> The inventory totals recorded by Méroc were:

retouched tools	387
nuclei	81
unretouched blades and bladelets	193
unretouched flakes	1,005
<i>silex informes</i> (discarded)	168

A few years after their 1959 work together, Laplace (1966b: 526) included an inventory of the retouched tools in his long monograph on the early Upper Palaeolithic of the region. This list can be compared with Méroc's own version of the joint inventory of retouched tools (Table A-1).<sup>2</sup> The Méroc inventory was never published, but a hand-written version was included in his notes on the site of Les Tam-

bourets. The lists of Méroc and Laplace cannot easily be compared directly because whereas Méroc used broad, traditional typological categories, Laplace used the idiosyncratic categories of his "*typologie analytique*" (Laplace 1966b). However, if some obvious differences in how to treat unmodified *pièces à crête*, splintered pieces, and miscellaneous retouched pieces are taken into account, the two inventories are very similar.

There are no serious disagreements between the Méroc and Laplace data about the frequencies of any of the major tool classes, and both can be used in a comparison of Rachat and Les Tambourets. Scrapers outnumber burins, and the scrapers are predominantly end-scrapers on flakes or short blades (cf. Tables 3-6 and 5-3). Dihedral burins predominate at Rachat, as is the case in most areas of Les Tambourets, including Area 2, the area closest to Rachat (cf. Table 7-7). As at Les Tambourets, Châtelperron points are sometimes made on *lames à crête*, but the Rachat frequency reported by Laplace, about 60%, is greater than those encountered at Les Tambourets. The highest frequency at the latter site, 18%, is found in Area 2, the area closest to Rachat (cf. Table 6-4). An additional similarity between the two sites is seen in the frequencies of notched pieces and denticulates (considered globally by both Méroc and Laplace); at both, notched pieces outnumber denticulates, and together they are the most frequent tools in the assemblage samples (cf. Table 3-6).

Table A-1.--Typological inventory done in 1959 by Louis Méroc and Georges Laplace of the artifacts from Rachat surface-collected by Méroc.

Méroc's categories (from Document 74 of Méroc dossier on Les Tambourets)

<i>lames à crête</i>	62
<i>éclats à crête</i>	<u>10</u>
	72
<i>[lames de] Châtelperron</i>	22
<i>lamelles à retouches abruptes</i>	30
<i>troncatures sur lames</i>	10
<i>troncatures sur éclats</i>	4
<i>pièces écaillées</i>	11
<i>éclats utilisés</i>	38
<i>racloirs</i>	1
<i>lames utilisées</i>	41
<i>lames retouchées</i>	9
<i>denticulées</i>	65
<i>pointes triangulaires</i>	1
<i>grattoirs</i>	52
<i>burins</i>	<u>31</u>
	315

Laplace's categories (from Laplace 1966b: 526)

<i>burins</i>	31
<i>grattoirs</i>	43
<i>troncatures</i>	15
<i>becs</i>	1
<i>pointes à dos</i>	34 [includes 26 Châtelperron points, of which 16 are on lames à crête]
<i>lames à dos</i>	11
<i>dos et troncatures</i>	5
<i>pointes</i>	2
<i>lames-racloirs</i>	53
<i>racloirs</i>	40
<i>abrupts</i>	16
<i>denticulées</i>	72
<i>pièces multiples</i>	<u>3</u>
	326
<i>pièces écaillées</i>	10

After Méroc's death, his collection went to the Dépôt de Fouilles de la Circonscription Préhistorique de Midi-Pyrénées, which was at that time in Toulouse, where I examined it *very briefly* on 12 August 1975. I estimated then that the collection contained ca. 1,000–1,500 pieces, mostly unretouched flakes and nuclei, but it seemed apparent that some (many?) of the better formed retouched tools must have been stored elsewhere, not in the drawers I examined. It may therefore be the case that the summary of the Méroc/Laplace inventory of retouched pieces, included here as Table A-1, may be the best information now available on the Palaeolithic content of Rachat. Méroc considered the Palaeolithic materials from Rachat to represent a Châtelperronian industry essentially identical to that from Les Tambourets, and my examination of the (partial?) Rachat collection in Toulouse produced exactly the same diagnosis. For both Méroc (1963a: 73) and Laplace (1966b: 206), the Châtelperronian of Rachat and Les Tambourets was a late or evolved Châtelperronian because of the paucity in

their assemblage samples of characteristically Mousterian artifacts.<sup>3</sup>

The Rachat material in Toulouse included, in a separate batch, some pieces that Méroc had labelled “*?néolithique*”, but I found no mention of such pieces in his notes. Given the known Middle Neolithic material elsewhere on the +30m terrace and at Terssac, it would not be surprising to find a few stray pieces at Rachat, but there is no evidence known to me that it was ever a Neolithic site. Rachat is, or was, a Châtelperronian site.

#### ENDNOTES

1. Documents 73 through 78 of the Méroc dossier on Les Tambourets.
2. Méroc and Laplace used somewhat different terminology. In order to avoid possible misunderstandings from the introduction of yet a third terminology (English), the French-language terms of the authors of the inventory lists have been retained in the table.
3. Laplace (1966b: 206) stated his opinion that Rachat was not only typologically “evolved”, but probably also chronologically late (“...occupant vraisemblablement une position chronologique tardive”).

## APPENDIX B

## ATTRIBUTE SYSTEMS

## INTRODUCTION

The formal variation within each major artifact class recognized by the analysis (e.g., end-scrapers, nuclei, unretouched *débitage* flakes, etc.) may be described in terms of an *attribute system* composed of a number of *attribute sets*, each of which contains two or more *attributes*. For ease of reference, each set of a system is numbered serially, and the serial number is prefixed by a two-letter code for the system in question. For example, end-scrapers attribute sets are designated ES1, ES2, ES3, etc. Some attribute sets that codify the variation in the blank<sup>1</sup> on which retouched flint tools are manufactured have utility for the study of several artifact classes (for example, burins as well as end-scrapers, truncated pieces, etc.). These sets, which are not specific to a given artifact class, are designated NS1, NS2, etc. and are described first in the paragraphs below.

The attribute systems used here are based, in large part, on attribute systems for Upper Palaeolithic tools codified and published in the 1960's by the group of archaeologists working on the materials from the site of Abri Pataud in Dordogne (Movius et al. 1968). Where the definitions of attribute sets used for the Tambourets study correspond exactly to those published by the Pataud group, the set in question is defined very briefly here, and the reader is referred to the earlier publication. Attribute sets that modify the work of Movius et al. (1968) and those that do not appear in the earlier work are explained more fully here.

## I. THE BLANK (ATTRIBUTE SETS NOT SPECIFIC TO A SINGLE ARTIFACT CLASS)

NS1: Nature of the blank. If the blank has an identifiable ventral surface, its length-width ratio determines whether it is a blade or a flake. For a blade, length measured in the bulbar axis (Movius et al. 1968: 8) is equal to or greater than twice the width. The length of a flake is less than twice the width. "Broken or extensively worked pieces, which by comparison with complete pieces in the series may be reasonably estimated to have had an original length [at least] twice as great as the width, are also included [as blades]" (Movius et al. 1968: 4). Blanks on which a ventral surface cannot be clearly identified (because of shattering during the *débitage* process, later thermal damage, or for whatever reason) are designated "chunks." The three attributes of NS1 are, then, blade, flake, and chunk.

NS2: Occurrence of cortex. This is a dichotomous set, cortex being either present or absent.

NS3: Completeness of blank length. This set is essentially a qualifier of NS4 (below). The blank is complete if NS4 can be measured from one original extremity of the blank (proximal or distal) to the other, from one extremity to some modifying retouch at the other end (e.g., from the striking platform to the furthest distal extent of an

end-scrapers scraping edge), or from modifying retouch at one end to modifying retouch at the other (e.g., from the furthest proximal extent of a burin edge to the furthest distal extent of an end-scrapers, on a combination tool). If breakage precludes such a measurement of NS4, the blank is fragmentary.

NS4: Length(B) of blank, and

NS5: Maximum width(B) of blank. These measurements are the dimensions of the smallest rectangle into which the blank will fit when it is oriented with its bulbar axis parallel to the length dimension. Both measurements are taken by placing the artifact, oriented as defined, on a piece of millimeter paper; readings are made to the nearest millimeter.

NS6: Length(W) of blank, and

NS7: Maximum width(W) of blank. These measurements, made to the nearest millimeter, are the same as NS4 and NS5 except that the artifact, a retouched tool, is oriented with its working axis parallel to the length dimension.<sup>2</sup>

NS8: Maximum thickness of blank. This measurement, made to the nearest millimeter with sliding calipers, is the greatest thickness reading obtainable measured in a straight line, at a right angle to the plane of the ventral surface, connecting the ventral surface with the dorsal surface distal of the immediate region of the bulb of percussion. In other words, the maximum thickness of the body of the blank is measured in such a way as to exclude the swelling of the bulb.

NS9: Condition of the blank margins. Each lateral margin (left and right) of the blank may be characterized as unmodified, utilized but unretouched, or retouched. Marginal retouch is discussed below (NS10 through NS13). A margin is considered utilized if it bears small but still macroscopically visible damage removals that, although numerous, are less regular and less continuous along the line of edge than the removals of marginal retouch. Although nothing short of a microscopic study of wear damage can provide definitive information about individual artifacts, the general concept underlying this attribute set is a distinction between modification created deliberately to prepare an artifact *for use* (retouch) and modification created accidentally as a *result of use* (utilization).

NS10: Marginal retouch (type). (This set and the three following ones apply to only those artifacts having some marginal retouch as recorded by NS9.) Terminology for different kinds or styles of marginal retouch is very varied in the literature of Palaeolithic archaeology, and usage is frequently not comparable from one author to another. The Pataud group, in an attempt "...to codify, in terms of a series of attributes, the descriptive framework for the various categories of retouch style recognized at present in connection with Upper Palaeolithic studies in Southwestern France" (Movius et al. 1968: 6), defined six types of retouch of relevance here: fine, heavy, Aurignacian, scaled, stepped, and

flat. These types, used here as the attributes of set NS10, are in fact based on variation in underlying attribute sets that are not formally coded in this study. Table B-1 (after Bricker 1973: 239, Table 5-1, which is based on an excellent discussion of marginal retouch by David 1966: 312–318 and Table 67) defines the attributes used here in terms of the underlying variation. “Backing,” the very drastic marginal modification of Châtelperron points and other backed tools, is included in Table B-1 for purposes of comparison.

NS11: Marginal retouch (direction). The retouch removals may be obverse (originating from the ventral surface and appearing on the dorsal surface), inverse (from the dorsal, on the ventral), or obverse/inverse (originating from and appearing on *both* surfaces along the same line of edge).

NS12: Marginal retouch (extent). If marginal retouch is present without interruption along the entire length of at least one margin, the extent is continuous. If it is not, the extent is partial. If the artifact is fragmentary (NS3), the

marginal retouch is considered continuous if it is uninterrupted along that portion of the margin that is present.

NS13: Marginal retouch (zone). The location of marginal retouch is recorded with reference to six zones numbered 1 through 6. Zones 1, 3, and 5 refer, respectively, to the anterior, medial, and posterior thirds of the left margin of the original unbroken blank.<sup>3</sup> Zones 2, 4, and 6 refer to the corresponding portions of the right margin. If an artifact is broken such that only what can be considered to be approximately the posterior half is present and if that fragment bears continuous marginal retouch on its right margin, the retouch is recorded as being located in Zones 4 and 6, etc.

NS14: Marginal notches (zone). (This set and the two following ones apply only to those artifacts having some occurrence of marginal notching—an implied attribute set not formally codified here.) The location of marginal notching is recorded in terms of the six-zone system discussed above for NS13.

Table B-1.--The attribute sets underlying the classification of marginal retouch. C = attribute particularly characteristic of the type in question. X = important but less characteristic attribute. (X) = rarely encountered alternative attribute.

Attribute Sets	Marginal Retouch Types	F	H	AUR	SC	ST	FL	(BK)
-----	-----	-	-	---	--	--	--	----
ANGLE OF EDGE	Perp./Steep	C	X	X		(X)		C
	Medium	(X)	X	(X)	(X)	X		
	Sharp				C		X	
RETOUCH NARROWS PIECE	Extensively			C			X	C
	Somewhat		X				X	
	Scarcely	X			X	X	X	
SCARS INVADE DORSAL SURFACE	Extensively						C	
	Slightly		X	X	X	X		
	Scarcely	X	X	X				X
DISTAL TERMINATION OF SCARS	Follow thru	X	X	X	X			X
	Break out			X	(X)	C		
	Feather out						C	
SIZE OF SCARS	Broad			C	(X)	(X)	X	
	Medium		X	(X)	X	X	X	X
	Narrow	C					X	X
SHAPE OF SCARS	Squamous			X	C			
	Non-squamous	X	X	X		X	X	X

NS15: Marginal notches (direction). Notches are either obverse or inverse.

NS16: Marginal notches (technique). Notches are either “single-blow” (a single flake scar creates the notch) or retouched (multiple flake scars combine to create the notch).

NS17: Flint variety. (The different macroscopically distinguished sorting varieties of flint found at Les Tambourets are discussed in detail in Chapter 13 of the text and described in Appendix C.

NS18: Occurrence of double patination. Double patination of a flint object may occur when two episodes of knapping (blank production, retouch, etc.) are both separated by and followed by a lengthy period of chemical weathering of the flint. The visual characteristics of the patination on the earlier removal scars may differ appreciably from those on the later removal scars, indicating later reworking of a previously worked artifact. The set is dichotomous, double patination being present or absent.

NS19: Occurrence of heat alteration. Flint artifacts that have been burnt may show characteristic alteration—crazing, spalling, and often (though not always) discoloration. Such alteration is recorded as present or absent.

NS20: Nature of the striking platform. (This set and the two following ones apply only to those artifacts on which a striking platform is present—an implied attribute set not formally coded here.) If the striking platform of the blank is formed of a *single* flake-scar facet or of a cortical surface, it is recorded as “smooth.. If it is formed of two or more flake-scar facets, it is recorded as “faceted.”

NS21: Striking platform width. This measurement is the length in millimeters of the longest line connecting the intersection of the platform with the ventral surface and the intersection of the platform with the dorsal surface, measured at a right angle to the plane of the ventral surface. It is the dorso-ventral dimension of the platform.

NS22: Striking platform length. This measurement, also in millimeters, is the side-to-side dimension of the platform, measured in the plane of the platform’s surface and at a right angle to platform width.

## II. END-SCRAPERS

Attribute sets ES1 through ES19 deal with variation in the scraping edge itself; sets ES20 through ES41 deal with variation in the blank and its non-scraping-edge modifications.

ES1: Scraping edge contour. Based primarily on their study of Gravettian and Noaillian end-scrapers, the Pataud group defined five characteristic scraping edge contours related to the “pure” shape of the arc of a circle (Movius et al. 1968: 10, 13, and 12, Figure 5). The very regular “arc-of-circle” contour corresponds precisely to some portion (specified by ES4, see below) of the circumference of a circle of a given radius (specified by ES3, see below). The “asymmetrical” contour is also a very regular edge, but it is not laterally symmetrical. Rather, the left side of the scraping edge fits closely the arc of a circle of a given radius, but the curvature changes gradually toward the right side of the edge such that it fits the arc of a circle of a different radius, either smaller or larger than that appropriate to the

left side of the edge. Both left and right sides of a “blunt point” contour fit the arc of the same circle, but the central portion of the edge extends beyond that arc, forming an ogival shape in extreme cases. The “flattened” contour is similar in concept, but its central portion falls short of the arc to which its edges conform. An “irregular” contour, as the name implies, does not conform to the arc-of-circle model but does not vary from it in any regular way. (Because the great majority of the Tambourets end-scrapers are irregular, the variation in scraping edge contour is better described by the addition of a new attribute set, ES13, as discussed below.)

ES2: Direction of scraping edge retouch. The retouch forming the scraping edge may be obverse or inverse.

ES3: Radius of circle, and

ES4: Degrees of arc. (These sets apply only to those end-scrapers having an arc-of-circle scraping edge contour, ES1.) These measurements are made by placing the end-scrapers on a goniometric card, as explained and illustrated by Movius et al. (1968: 13 and 12, Figure 4). Radius of circle is recorded to the nearest 0.25cm and degrees of arc to the nearest 10°.

ES5: Retouch angle. This observation is a generalized approximation to the most characteristic or most generally applicable angle between the retouch scars forming the scraping edge and the ventral surface immediately beneath them. Movius et al. (1968: 13–15) discuss the pitfalls of misplaced exactness and illustrate how the measurement is made on a goniometric card (1969: 14, Figure 6). Retouch angle is recorded for this study in terms of five attributes, as follows:

Acute <sup>4</sup>	50° or less
Medium	51° through 75°
Steep	76° through 85°
Perpendicular	86° through 95°
Overhanging	greater than 95°

ES6: Retouch pattern. This set is described and illustrated by Movius et al. (1968: 15 and 11, Figure 3) as “retouch of the scraping edge.” A scraping edge is considered to be convergent if the distal ends of the flake scars forming it “...tend to converge on a single point, generally but not always a central ridge of the blank” (1968: 15). An edge is semi-convergent if several sets of scars converge on separate points or if only one part of the edge is formed of converging scars. The scars of a non-convergent edge have no tendency to converge.

ES7: Orientation angle, and

ES8: Asymmetry direction. These two sets together measure the orientation of the scraping edge—whatever may be its contour—to the working axis of the tool (Movius et al. 1968: 15 and 16, Figure 7). If one employs the concept that an end-scrapers is manufactured by “mounting” a scraping edge on a blank, these sets measure whether the edge is mounted “squarely”—at 90° to the working axis—or in an asymmetrical fashion. If the mounting is asymmetrical, the sets specify the direction, left or right, of the

asymmetry as well as its extent. The attributes of ES8 are three: none (=“90°”), left, and right. The attributes of ES7 are angular measurements made on a goniometric card and recorded to the nearest 10°.

ES9: Coded orientation angle/asymmetry direction. This set, used in some of the quantitative analyses, is simply a combination of ES7 and ES8 reduced to numerically coded form. A squarely mounted edge (90°, no asymmetry) is coded as 0; an edge mounted slightly asymmetrically to the right (80°, right) is coded as +1; 70° right = +2; 80° left = -1; etc.

ES10: Scraping edge width. The width of the scraping edge is measured as a straight line connecting the junction of the scraper retouch with the margin of the piece on one side and the similar junction on the other side. The measurement is made to the nearest millimeter with sliding calipers.

ES11. Scraping edge thickness. Scraping edge thickness, also measured to the nearest millimeter with sliding calipers, is the longest straight line connecting the ventral surface and the distal ends of the retouch removal scars, measured at a right angle to the ventral surface.

ES12: Scraping edge length. This measurement, made in the plane of the ventral surface, is “...the distance from the width line [i.e., the line specified above in the definition of ES10] to the foremost projection of the scraping edge, measured perpendicular to the width” (Movius and Brooks 1971: 262). It is most easily determined, to the nearest millimeter, by placing the end-scraper on a piece of millimeter paper (1971: 263, Figure 6).

ES13: Roundness index. Roundness index is a calculated value that permits an idealized description of the scraping edge in terms of the arc of a circle. It accomplishes in an idealized and therefore approximate fashion what attribute sets ES3 and ES4 do for arc-of-circle contours only, but it does so for all scraping edge contours. Its general applicability is important for scrapers like those of Les Tambourets that are predominantly irregular. The roundness index, adapted from a similar measure proposed by Movius and Brooks (1971: 263–264) under the name “roundness of front contour,” is calculated as follows:

$$I_r = 4 \cot^{-1}(0.5[W/L]),$$

where  $W$  is the scraping edge width (ES10),  $L$  is the scraping edge length (ES12),  $\cot^{-1}$  is the arccotangent, and  $I_r$  the roundness index, is expressed in degrees. A scraping edge having a width of 24mm and a length of 12mm has a roundness index of 180°. For a width of 24mm and a length of 6mm, the index is 106°; etc.

ES14: End of blank. This set specifies the location of the scraping edge with respect to the bulbar axis of the blank. End of blank is recorded as distal, proximal, or indeterminate.

ES15: Corner features (extent). (This set and the three following ones apply only to those end-scrapers having some occurrence of corner features—an implied attribute set not formally coded here.) Notches and other small re-

movals located just at the junction or “corner” of the scraping edge and the margin of the piece are collectively designated “corner features.” The two attributes of this set are “notch” (the scars in question create a definite concavity) and “removal” (the scar or scars modify only slightly the morphology of the corner).

ES16: Corner features (side). The features affect the left and/or right corners of the scraping edge.

ES17: Corner features (direction). The features are obverse or inverse.

ES18: Corner features (technique). Notches are either “single-blow” or retouched (cf. NS16).

ES19: Tool disposition. This set specifies how many tool edges of what kinds are mounted on the blank in question. The attributes are “single” (one end-scraper only), “double” (two end-scrapers at opposite ends of the blank), “combination tool” (end-scraper at one end plus some other tool class elsewhere, usually at the opposite end), and “other disposition” (a triple tool of some sort, rarely encountered).

ES20 through ES25. These end-scraper attribute sets are identical to previously defined non-class-specific sets, as follows: ES20 = NS1; ES21 = NS2; ES22 = NS3; ES23 = NS6; ES24 = NS7; ES25 = NS8.

ES26: Blank contour. This set “...treats the rectilinearity of the margins or lack of it; if the margins are rectilinear, it determines the degree to which they approach or depart from being parallel” (Movius et al. 1968: 15). It was originally proposed by Sackett (1966: 363). The set has seven attributes, defined as follows:

- Contour 1: Blank margins are parallel (divergence of the margins is less than 10°).
- Contour 2: Margins diverge slightly (10° to 19°) from the posterior end toward the scraping edge.
- Contour 3: Margins diverge markedly (20° or more) toward the scraping edge. (This is what is often called a “fan-shaped” scraper.)
- Contour 4: Margins converge slightly toward the scraping edge.
- Contour 5: Margins converge markedly toward the scraping edge.
- Contour 6: One or both margins is not rectilinear.
- Contour 7: Indeterminate; the fragmentary blank is too short for a determination to be made.

Blank contour is measured on a goniometric card (Movius et al. 1968: 16, Figure 8).

ES27: Blank cross-section. The transverse cross-section of the blank immediately posterior of the scraping edge is recorded in terms of the three following attributes (Movius et al. 1968: 10): “triangular” (the blank has only one major dorsal ridge), “trapezoidal” (more than one major dorsal ridge), and “amorphous” (there is no coherent pattern of dorsal ridges, usually because all or part of the dorsal surface is cortical).

ES28 through ES41. These end-scraper attribute sets are identical to previously defined non-class-specific sets, as follows: ES28 = NS9; ES29 = NS10; ES30 = NS11; ES31 =

NS12; ES32 = NS13; ES33 = NS14; ES34 = NS15; ES35 = NS16; ES36 = NS17; ES37 = NS18; ES38 = NS19; ES39 = NS20; ES40 = NS21; ES41 = NS22.

### III. SIDE-SCRAPERS

Attribute sets SS1 through SS15 deal with variation in the scraping edge; sets SS16 through SS30 deal with variation in the blank and its non-scraping-edge modifications.

SS1 through SS4. These side-scrapers attribute sets are identical to previously defined end-scrapers sets, as follows: SS1 = ES1; SS2 = ES2; SS3 = ES3; SS4 = ES4.

SS5: Retouch angle. This set has five attributes, "acute" through "overhanging," defined as for end-scrapers attribute set ES5. Because the line of scraping edge retouch on a side-scrapers is frequently more extensive than that on an end-scrapers, there is often great variation in retouch angle along that line of edge. Just as for end-scrapers, however, the retouch angle recorded is the one that is most characteristic or most generally applicable. For example, retouch angle is recorded as "steep" if that describes most of the edge, even though parts of the edge may be as sharp as "acute" or as dull as "overhanging."

SS6: Retouch pattern. This set is the same as end-scrapers set ES6.

SS7: Orientation angle, and

SS8: Asymmetry direction, and

SS9: Coded orientation angle/asymmetry direction. These three sets have the same basic definitions as end-scrapers sets ES8 through ES9 *except that* the "working orientation" used is determined by analogy with end-scrapers. The side-scrapers scraping edge is considered, for these purposes, to be at an *end* or *corner* of the blank (in other words, its true relationship to the bulbar axis is suppressed), and the measurements are made accordingly. Such an analogy is employed in order to provide data that are at least largely comparable for both end-scrapers and side-scrapers. Although this procedure would be meaningless in many blade-rich Upper Palaeolithic assemblages, it has considerable utility for the analysis of the Tambourets scrapers series.

SS10 through SS13. These side-scrapers attribute sets are identical to previously defined end-scrapers sets, as follows: SS10 = ES10; SS11 = ES11; SS12 = ES12; SS13 = ES13.

SS14: Location of scraping edge. With the blank in a bulbar orientation, dorsal surface up, the location of the scraping edge is described as "left side," "right side," or "indeterminate."

SS15: Tool disposition. This set specifies how many tool edges of what kinds are mounted on the blank in question. The attributes are "single" (one side-scrapers only), "double" (one side-scrapers on *each* lateral margin of the blank), "combination tool" (one side-scrapers plus one other tool class elsewhere on the blank), and "other" (a triple tool of some sort, rarely encountered).

SS16 through SS19. These side-scrapers attribute sets are identical to previously defined non-class-specific sets, as follows: SS16 = NS1; SS17 = NS2; SS18 = NS3; SS19 = NS4.

SS20: Completeness of blank width. This set is essen-

tially a qualifier of set SS21 (= NS5), below. The width is complete if, with the blank in a bulbar orientation, SS21 can be measured from the furthest leftward projection of the scraping edge retouch or the unretouched but unbroken left margin to the furthest rightward projection of the scraping edge retouch or the unretouched but unbroken right margin. If breakage precludes such a measurement—that is, if the line defining SS21 would encounter a broken surface on either side of the blank—the blank is fragmentary.

SS21 through SS30. These side-scrapers attribute sets are identical to previously defined sets, as follows: SS21 = NS5; SS22 = NS8; SS23 = ES26; SS24 = ES27; SS25 through SS30 = NS17 through NS22, respectively.

### IV. END-AND-SIDE-SCRAPERS

Attribute sets EA1 through EA8 deal with variation in the scraping edge; sets EA9 through EA21 deal with variation in the blank and its non-scraping-edge modifications.

EA1: Direction of scraping edge retouch. The retouch forming the scraping edge may be obverse, inverse, or mixed. In the latter case, part of the scraping edge is obverse and the other part is inverse.

EA2: Retouch angle. This set has five attributes, "acute" through "overhanging," defined as for end-scrapers set ES5. Because the line of scraping edge retouch on end-and-side-scrapers is much more extensive than that on end-scrapers, the variation in retouch angle along that line of edge is correspondingly greater in most cases. For a test sample, the total retouch angle range (for example, "medium" through "overhanging") was recorded along with the customary notation of the angle judged visually to be most characteristic (for example, "steep"). When the attribute observations for each edge were coded numerically (transformed to an ordinal scale of measurement), weighted so that the "most characteristic" attribute (present on a greater part of the edge than any other attribute) was weighted more heavily, and mean retouch angles calculated, it was determined that the elaborate manipulation of retouch angle range did *not* produce a significantly different description of the scraping edges than the simpler judgment of "most characteristic" angle. Accordingly, the measurement of retouch angle appropriate to end-scrapers (ES5) and side-scrapers (SS5) is appropriate to end-and-side-scrapers also.

EA3 through EA6. These end-and-side-scrapers attribute sets are identical to previously defined end-scrapers attribute sets, as follows: EA3 = ES10; EA4 = ES11; EA5 = ES12; EA6 = ES13.

EA7: Location of scraping edge. With the blank in a bulbar orientation, dorsal surface up, the location of the scraping edge is described as "end plus left side," "end plus right side," "end plus both sides," or "indeterminate."

EA8: Tool disposition. The attributes of this set are "single" (a scraping edge located on one end and one lateral margin only), "double" (a scraping edge located on one end and both lateral margins), "combination tool" (a single end-and-side-scrapers plus one tool of another class elsewhere on the blank), and "other" (a triple tool of some

sort). (On a double end-and-side-scraper [more accurately an end-and-double-side-scraper], the measurements of scraping edge width [EA3] and scraping edge length [EA5] and the calculation of roundness index [EA6] are essentially meaningless.)

EA9 through EA21. These attribute sets of end-and-side-scraper blanks are identical to previously defined attribute sets, as follows: EA9 = NS1; EA10 = NS2; EA11 = NS3; EA12 = NS4; EA13 = SS20; EA14 = NS5; EA15 = NS8; EA16 through EA21 = NS17 through NS22, respectively.

## V. DISCOIDAL SCRAPER

Attribute sets DS1 through DS3 deal with variation in the scraping edge; sets DS4 through DS16 deal with variation in the blank and its non-scraping-edge modifications.

DS1 through DS16. These discoidal scraper attribute sets are identical to previously defined attribute sets, as follows: DS1 = EA1; DS2 = EA2; DS3 = ES11; DS4 = NS1; DS5 = NS2; DS6 = NS3; DS7 = NS4; DS8 = SS20; DS9 = NS5; DS10 = NS8; DS11 through DS16 = NS17 through NS22, respectively.

It may be appropriate to explain here the absence of several sets used in the description of other scraper classes. Scraping edge width, scraping edge length, and roundness index have no generally applicable utility in the description of discoidal scrapers. Because the scraping edge affects all or most of the circumference of the blank except for the original striking platform (and even that has sometimes been covered by the scraping edge), the line connecting the extremities of the scraping edge retouch (as defined for ES10, scraping edge width) is usually a shorter line than could be drawn between the left and right retouched margins somewhere near the proximal-to-distal midline of the piece. In this case, the concept of scraping edge width has little meaning. If the scraping edge retouch covers 360° of the circumference, including the striking platform of the blank, edge width as defined by ES10 does not exist. It follows from these considerations that when scraping edge width is a non-existent or meaningless measurement, scraping edge length cannot usefully be measured, nor can roundness index (based on edge width and edge length) be calculated.

## VI. CHÂTELPERRON POINTS

Unlike most of the other tool classes described in this report, Châtelperron points represent such an extensive modification of the blank (a blade, by definition [Brézillon 1971: 306–307; de Sonneville-Bordes and Perrot 1956b: 547]) that the usual subdivision of the attribute system into sets that deal with the modification and those that deal with the blank has little utility here. Nor, for the most part, is it useful to invoke the concept of how the “tool” is mounted on the blank. The attribute system used for the description of Châtelperron points is an adaptation of that defined for backed tools, especially Gravette points, by Movius et al. (1968: 37–48).

CH1: Portion. This attribute set specifies how much of the originally complete tool is available for study—all of

it, or just a portion. The set has five attributes. A piece is *complete* if it is unbroken. *Almost complete* pieces lack a very small fragment or fragments, usually the extreme anterior tip. Sometimes the missing fragment is the extreme posterior tip, and occasionally the extreme tips are missing from both ends. Enough of the tool must, however, be present so that its gross morphology can be recorded with no possibility of significant error and that its original, complete length can be estimated within very close limits. In practice, this reconstructive estimate of original length is most easily done graphically by placing the almost complete tool on millimeter paper and drawing two lines that continue the curves of the edges until the lines meet. If the length of the missing fragment estimated in this fashion is greater than 10mm, the tool is too fragmentary to be called “almost complete;” rarely does estimated length exceed the actual broken length by as much as 6mm.

The extremities of Châtelperron points are almost always very distinctively different. The anterior extremity is characteristically a sharp point formed by the intersection of the curving (or, sometimes sharply angled) line of backing with the edge opposite the backing. If, on a broken piece, only this extremity is present, it is called the *point* portion. The posterior extremity is characteristically much blunter and thicker. Frequently, some part of the original striking platform of the blade is present. Such a fragmentary portion is called the *butt*. A fragment of a Châtelperron point broken in such a way that both extremities are missing and that only the medial portion remains is called a *segment*.

CH2: Completeness of backing. If the backing extends along the margin without interruption, the backing is complete. If only part of the margin is backed and some other part is the original unretouched edge of the blade, the backing is said to be partial.

CH3: Backing cross-section. This attribute set is explained and illustrated in Movius et al. (1968: 38–39 and 39, Figure 21). Six cross-section categories codify the transverse cross-section of the blade that results from the backing modification. Cross-section may and often does vary along the line of backing on any given tool, and in the attribute recording stage *all* cross-section categories that occur are noted. The six categories are defined as follows:

Category I. Whatever the original cross-section of the blank might have been, the backing has removed so much of the width of the blank that the resultant cross-section approximates a right triangle. No major dorsal ridges are preserved.

Category II. The original cross-section of the blank was trapezoidal, with at least two major dorsal ridges. The backing has removed much of the original width, leaving only one major dorsal ridge, part of one dorsal facet that is essentially parallel to the ventral surface, and, of course, the unaltered dorsal facet along the unbacked margin.

Category III. The original cross-section of the blank was almost certainly triangular, with only one major dorsal ridge. The backing has closely approached but not reached or removed this ridge, which remains still visible.

Category IV. The original cross-section of the blank was trapezoidal, with at least two major dorsal ridges. The backing has closely approached but not yet reached or removed the first major dorsal ridge counting from the backed edge.

Category V. The original cross-section of the blank was triangular. The backing has destroyed very little of the original width of the blank and does not closely approach the dorsal ridge.

Category VI. The original cross-section of the blank was trapezoidal. The backing has destroyed very little of the original width of the blank and does not closely approach the first major dorsal ridge counting from the backed edge.

As noted previously, the backed edge on a given tool may have more than one cross-section category. In this case, the category with the lowest Roman numeral is referred to as the *priority cross-section*. On tools that have only one cross-section category (usually fragmentary portions), that category is the priority cross-section.

CH4: Backing direction. This attribute set has three attributes: ventral, dorsal, and bidirectional (Movius et al. 1968: 40 and 39, Figure 21). Ventral backing is present if *all* the backing removals along a given section of the backed edge originate from the ventral surface. If they originate from the dorsal surface (i.e., if they are inverse removals), dorsal backing is present. If a given part of the backed edge is formed by a combination of removals originating from the ventral surface and removals originating from the dorsal surface such that the distal ends of the two sets of removal scars meet and/or overlap, then bidirectional backing is present. Backing direction, like cross-section, frequently varies from one part of a backed edge to another. All occurring backing directions are noted in the attribute recording stage. A *priority backing direction* is identified by considering the three possible attributes to be ranked as follows: bidirectional > ventral > dorsal. If the line of backing of a given tool has only one backing direction, that direction is, of course, the priority backing direction.

CH5: Maximal extent of backing. It is obvious from the definitions given previously for the six categories of backing cross-section (set CH3) that Categories I and II represent heavy backing (maximal modification of the blank), Categories V and VI represent light backing (minimal modification), and Categories III and IV represent medium backing (moderate modification). In this sense, the six attributes of CH3 may be collapsed into three to form the attributes of a new set, "extent of backing" (Movius et al. 1968: 39–40). Because the extent of backing may vary along the backed edge of a given tool, the maximal extent of backing for the tool as a whole is the heaviest backing extent present anywhere along the edge (heavy > medium > light). If, for example, a Châtelperron point has backing cross-sections "I," "III," "V," and "VI," the maximal extent of backing is recorded as "heavy" because of the presence of cross-section category I.

CH6: Minimal extent of backing. This set records the least modification accomplished by backing anywhere along the backed edge of a given tool. The attributes are the same as for set CH5—heavy, medium, and light. The mini-

mal extent of backing for the hypothetical example used in the paragraph above would obviously be "light" because of the presence of cross-section categories V and VI.

CH7: Generalized cross-section of backing. The six attributes of backing cross-section (CH3) may be collapsed into yet another combination (Movius et al. 1968: 39) to yield the two attributes of set CH7. If the priority cross-section (see discussion of set CH3, above) is Category I, III, or V, the generalized cross-section is triangular. If the priority cross-section is Category II, IV, or VI, the generalized cross-section is trapezoidal.

CH8: Backing side. This set (Movius et al. 1968: 46) specifies which margin of the blank has been modified by backing; for purposes of this determination, the tool is lying on its ventral surface with its point up and its butt down. Backing side may be left, right, or indeterminate.

CH9: Bulbar orientation of butt. Although the blades used as blanks for Châtelperron points were usually retouched in such a way that the butt of the tool is located at the proximal end of the blank, this was not always the case. This attribute set records the relationship between the two orientations, that of the tool and that of the blank. The attributes of the set are proximal, distal, and indeterminate.

CH10: Nature of the edge opposite the backing. This set is concerned with that part of the margin opposite the backing that is not involved with the creation of the point or butt morphology. This margin is characterized as either unmodified, utilized but unretouched, or retouched (Movius et al. 1968: 46). The definitions of these three attributes are the same as those discussed in more detail above for the non-class-specific attribute set, NS9.

CH11: Extent of retouch on the edge opposite the backing. (This set and the one that follows apply only to those tools having some retouch on the edge opposite the backing as recorded by CH10.) The retouch may be continuous or partial, as defined for attribute set NS12.

CH12: Direction of retouch on the edge opposite the backing. The retouch may be obverse, inverse, or obverse/inverse, as defined for attribute set NS11.

CH13: Point type. A typology based on several underlying attribute sets that are not formally coded in this study is used to record variation in the point (i.e., the anterior extremity) of Châtelperron points. The typology was originally developed for the study of Gravette points of the Gravettian and Noaillian, but it can be very usefully applied to Châtelperron points as well. Six point types are recognized, as defined and illustrated in Movius et al. (1968: 46, 48, and 47, Figure 27). The major variable determining the typology is the treatment, if any, of the anterior part of the edge opposite the backing, that part that intersects with the backing to form the sharp point. The point types are:

Unretouched. The anterior part of the edge opposite the backing is not retouched at all; the backing intersects an unretouched edge.

Obverse. Obverse retouch on the anterior part of the edge opposite the backing intersects with the backing.

Inverse-1. The edge opposite the backing at the point bears inverse retouch, but these inverse removal scars do

not extend completely across the ventral surface so as to intersect the line of backing.

Inverse-2. As for point type “Inverse-1,” the edge opposite the backing at the point bears inverse retouch, but, in this case, the inverse removals are flat and invasive, having the effect of thinning the point of the tool. The scars may be long, extending completely across the ventral surface to intersect with the backing, or two series of shorter scars, one originating from the backed edge and one originating from the opposite edge, may meet on the ventral surface to achieve the thinning.

Obverse/Inverse-1. Both obverse and inverse retouch create the point morphology, but the inverse removals do not thin the point.

Obverse/Inverse-2. Both obverse and inverse retouch create the point morphology, and the point is thinned by the flat and invasive inverse removals.

CH14: Butt type. Here again, a typology developed for the study of Gravette points is extremely useful for describing the morphological variation of Châtelperron points. The typology is based on one or more of the following six underlying attribute sets (not formally coded here): a) the nature of the posterior part of the edge opposite the backing; b) presence or absence of a preserved striking platform; c) the direction of retouch on the posterior part of the edge opposite the backing, if that edge bears retouch; d) the shape of the butt if the butt is formed by retouch of the edge opposite the backing; e) the shape or outline of the edge opposite the backing at the butt; and f) an angular measurement, if the shape of the butt is asymmetrically pointed. The latter underlying attribute set (“f,” above) is helpfully illustrated by Movius et al. (1968: 45, Figure 26). The butt types (illustrated for Gravette points in Movius et al. 1968: 47, Figure 27) are:

Unretouched-1. The posterior part of the edge opposite the backing is not retouched at all, but the striking platform of the blank is not preserved (most often because the backing has obliterated it).

Unretouched-2. The posterior part of the edge opposite the backing is unretouched, and all or part of the striking platform is preserved.

Obverse-1. The intersection of the backing and a line of obverse retouch on the opposite edge forms a symmetrically pointed butt.

Obverse-2a and Obverse-2b. Obverse retouch on the edge opposite the backing truncates the posterior end of the blade in such a way that there is a clear break in angle between that part of the opposite edge forming the butt and that part anterior to the butt region. An asymmetrically pointed morphology is created. If the butt is sharply pointed (as determined by a measurement illustrated by Movius et al. [1968: 45, Figure 26, 48]), the butt type is Obverse-2a; if not, it is Obverse-2b.

Obverse-3a and Obverse-3b. These types are like the two discussed immediately above except that the break in line between the medial part of the edge opposite the backing and the posterior part, which enters into butt formation, is a smooth curve.

Obverse-4. This is a residual category; obverse retouch on the posterior part of the edge opposite the backing enters into the formation of the butt, but the resultant morphology cannot be assigned to any of the previously defined obverse butt types.

Inverse-1, -2a, -2b, -3a, -3b, and -4. These six butt types are identical to the six obverse butt types defined above except that the retouch on the posterior part of the edge opposite the backing is inverse rather than obverse.

Obverse/Inverse. The posterior part of the edge opposite the backing, whatever may be its morphology, bears both obverse and inverse retouch.

CH15: Vachons retouch on the butt. Just as the point of Châtelperron points and other backed tools may be thinned by flat, inverse retouch scars, so may the butt. The presence of this kind of thinning retouch (at the point or the butt or both) has been linked in the terminology of French typologists with the site of Les Vachons in Charente (the terminological issues are summarized by Brézillon 1971: 325). Because I have shown elsewhere (Bricker 1973: 1792–1794) that Vachons retouch on the butt (*only* the butt, not the point) is important to time-space systematics of the Gravettian and Noaillian, and because Vachons retouch of the butt occurs very occasionally on Châtelperron points as well, it is included in the attribute system used here. The attribute set is dichotomous, Vachons retouch of the butt being either present or absent.

CH16: Completeness of tool length. This set is essentially a qualifier of CH17 (below). Tool length is complete if it can be directly measured on an unbroken tool (the CH1 attribute is “complete”) or estimated through graphic reconstruction on a tool missing only a few millimeters of its original length (the CH1 attribute is “almost complete”). For other fragmentary portions—points, segments, and butts—the length is fragmentary.

CH17: Length of tool. Length is the maximum length in millimeters, measured with sliding calipers, from the furthest posterior extension of the portion in question to the furthest anterior extension (Movius et al. 1968: 40).

CH18: Estimated length of tool. This set applies only to “almost complete” portions, and it is measured by the procedure explained in the discussion of set CH1.

CH19: Maximum width of tool. This dimension is the maximum width of the piece in millimeters, measured with sliding calipers at a right angle to the length and with the ventral surface of the tool at the point of measurement oriented parallel to the graduated bar of the calipers. On the rare Châtelperron points that are gibbous (see below, set CH27), the gibbosity is excluded from consideration, and CH18 is measured as the maximum width outside the region affected by the gibbosity.

CH20: Maximum thickness of tool. This is the maximum thickness of the piece located distally of the bulb, if present. It is measured to the nearest millimeter with sliding calipers; the piece is oriented such that its ventral surface at the point of measurement is parallel to and resting against one arm of the calipers.

CH21: Outline of backed edge. This attribute set and

the three following sets, which are recorded for complete and almost complete pieces only, were originally defined for the study of Gravette points (Movius et al. 1968: 43–44), but I have since shown that they are quite useful to the comparative study of several kinds of backed points in the Châtelperronian and Gravettian (Bricker 1978). Set CH21 has four attributes that codify the outline or morphology of the backed edge, as follows (see Movius et al. 1968: 43, Figure 23):

- Outline 1a. The backed edge forms a smooth, continuous line; most of whatever curve is present contributes to the formation of the butt.
- Outline 1b. The backed edge is a smooth, continuous line, but formation of the butt does *not* account for most of the curvature present.
- Outline 2a. The line of the backed edge has a sharply defined change in direction or break in angle. The sharply angled portion of the line contributes to the formation of the point.
- Outline 2b. As for 2a, there is a sharply defined break in angle, but the angled portion of the line contributes to the formation of the butt.

CH22: Divergence of the backed edge. This attribute set measures the extent of “curvature” of the line of backing by determining the ratio of two lines. The longer of the two lines is the straight-line distance in millimeters between the furthest posterior extent of the line of backing and its furthest anterior extent. The shorter line is the longest perpendicular that can be erected on the longer line in such a fashion as to connect it with the line of backing. (These two lines are very simply and rapidly measured by placing the tool on a piece of millimeter paper, as illustrated by Movius et al. [1968: 45, Figure 25]). The ratios obtained (shorter : longer) may be grouped for some purposes into three divergence classes: straight (greater than 1 : 18), moderately divergent (from 1 : 18 to 1 : 10), and very divergent (less than 1 : 10).

CH23: Outline of the edge opposite the backing. This set codifies the morphology of the edge opposite the backing rather than of the backing, but otherwise it differs only slightly from set CH21. The four attributes are (see Movius et al. 1968: 43, Figure 23):

Outline 1a. The edge opposite the backing forms a smooth, continuous line; most of whatever curve is present contributes to the formation of the point or the butt or both.

Outline 1b. The edge opposite the backing is a smooth, continuous line, but formation of the point and/or the butt does not account for most of the curvature.

Outlines 2a and 2b. These attributes are exactly analogous to their counterparts in attribute set CH21.

CH24: Divergence of the edge opposite the backing. This attribute set is exactly the same as set CH22 except that it measures the “curvature” of the edge opposite the backing instead of that of the backed edge.

CH25: Gross morphology. It is possible to use the patterns of co-variation among the attributes of sets CH21 through CH24 to construct a typology of backed points with respect to their gross morphology (overall shape, sil-

houette, etc.). Such a general typology is discussed in more detail by Movius et al. (1968: 44). Using the same general principles but placing more emphasis upon the defining morphological characteristics of Châtelperron points (the shape of the back), it is possible to recognize five major categories of gross morphology that are particularly relevant to the study of Châtelperron points. These categories are defined verbally below.

The *classic Châtelperronoid* morphology is the one described by the standard definitions (summarized by Brézillon 1971: 306–307): the line of backing cuts across the anterior end of the piece in a continuous curve, intersecting the edge opposite the backing to form an asymmetrical point. The degree of curvature may vary, as, with one exception, may the exact shape of the edge opposite the backing. The exception arises if the opposite edge is strongly curved or bellied; the point will then be nearly symmetrical, and the gross morphology of the piece as a whole will be roughly foliate. Such pieces, discussed further below, are excluded from the classic Châtelperronoid category.

A *parallel Châtelperronoid* morphology results when: 1) the line of backing cuts across the anterior end of the piece after a sharp break in angle rather than in a smooth curve; and, 2) the edge opposite the backing is straight along all or most of its length, diverging, if it does, with a clear break in angle to form an extremity. In such a case, the margins of the piece will be close to parallel along much of its length.

A similar morphology, described as *subparallel Châtelperronoid*, is created when the edge opposite the backing is continuously curved *if* the curvature is primarily involved in extremity formation or, if not, is not very divergent.

A *foliate Châtelperronoid* morphology results when a continuously curved line of backing is combined with a continuously curved opposite edge that is as divergent or more divergent than the backed edge.

The very similar *subfoliate Châtelperronoid* morphology occurs on pieces where the backed edge has a break in angle rather than a continuous curve.

CH26: *Lame à crête*. This set is dichotomous. The blank on which a Châtelperron point is manufactured either is or is not a *lame à crête*.

CH27: Gibbosity. When the line of backing has a pronounced convex salient or “bump” on it, the salient is called a gibbosity (Movius et al. 1968: 45, Figure 24). This attribute set is dichotomous, a gibbosity being either present or absent.

CH28 through CH30. These Châtelperron point attribute sets are identical to previously defined non-class-specific sets, as follows: CH28 = NS17; CH29 = NS18; CH30 = NS19; CH31 = NS2.

## VII. OTHER BACKED TOOLS

The attribute system described here is used for the study of shouldered pieces, *lames à dos*, and pieces with partial and/or irregular backing.

OB1: Portion. Because the objects of concern here are less patterned than Châtelperron points and because there is often serious doubt that they were ever complete, fin-

ished tools, the functional orientation (point vs. butt) used to describe fragmentary portions of Châtelperron points is here eschewed in favor of a strictly bulbar orientation. This attribute set has, then, four attributes: A piece is *complete* if it is unbroken. A broken piece is called a *distal* portion if the distal extremity is preserved, a *proximal* portion if the proximal extremity is preserved, and a *segment* if it terminates in a break at both ends.

OB2 through OB7. These attribute sets are identical to previously defined attribute sets of Châtelperron points, as follows: OB2 = CH2; OB3 = CH3; OB4 = CH4; OB5 = CH5; OB6 = CH6; OB7 = CH7.

OB8: Backing side. This set specifies which margin of the blank has been modified by backing. The observation is made when the artifact is lying on its ventral surface oriented so that its proximal end is 'down' (nearest to the viewer). Backing side may be left, right, or indeterminate (if the bulbar orientation of the blank is itself indeterminate).

OB9 through OB11. These attribute sets are identical to previously defined attribute sets of Châtelperron points, as follows: OB9 = CH10; OB10 = CH11; OB11 = CH12.

OB12: Shape of distal end. (This set and the one that follows apply only to those objects on which the distal extremity is present.) The shape of the extremity is described as sharply pointed, bluntly pointed, or not pointed.

OB13: Distal termination. This set has three attributes, which describe the distal termination of the blank as either: a) an unretouched "feather edge" or other sharp edge created by retouch; b) a steep dorsal facet (a blunt edge angle); or, c) a hinge fracture (again, a blunt edge angle).

OB14: Nature of proximal end. (This set applies only to those objects on which the proximal extremity is present.) The attributes of this set are the 15 composite typological categories used to describe the butt type of Châtelperron points (set CH14), but they are applied here to the proximal extremity of the artifact without making the assumption that this extremity is the functional "butt" of some complete, finished tool.

OB15: Completeness of tool. This set is a qualifier of OB16 (below). Tool length is complete if *each* of its ends is either an original extremity of the blank or a morphology created by retouch; otherwise, tool length is fragmentary.

OB16: Length of tool. Length is the maximum length in millimeters, measured with sliding calipers, from the furthest proximal extension of the portion in question to the furthest distal extension.

OB17: Maximum width of tool. This dimension is the maximum width of the piece in millimeters, measured with sliding calipers at a right angle to the length and with the ventral surface of the tool at the point of measurement oriented parallel to the graduated bar of the calipers.

OB18: Maximum backed width of tool. The determination of this dimension is made in a fashion very similar to that used for set OB17 *except* that the point of measurement is chosen so as to obtain the maximum width between the *backed* part of one margin and the unbacked margin directly opposite it. On completely backed objects, measurements of OB17 and OB18 are made at exactly the same place and

produce, therefore, identical results. On objects that are only partially backed, the measurements are made at different places, and the results are often different (with the value of OB18 usually less than that of OB17).

OB19 through OB25. These attribute sets are identical to previously defined attribute sets, as follows: OB19 = CH20; OB20 = CH26; OB21 = CH27; OB22 = NS2; OB23 = NS17; OB24 = NS18; OB25 = NS19.

## VIII. BURINS

Attribute sets BU1 through BU15 deal with variation in the burin edge and the surfaces that intersect to form it, sets BU16 through BU20 deal with the relationship of the burin to the blank on which it is made, and sets BU21 through BU43 deal primarily with variation in the blank and its non-burin-edge modifications.

BU1: SRS type. A fundamental aspect of variation within the burin tool-class concerns the nature of the surface from which the burin spall (or spalls) was struck to create the burin edge. This surface, which is designated the "spall removal surface" or "SRS" (Movius et al. 1968: 20–24) may be considered a specialized striking platform created or chosen to facilitate the removal of a specialized kind of blade, the burin spall, from the blank. The resulting burin edge is formed, in the simplest case, by the intersection of two more-or-less plane surfaces. The surface on one side of the edge is the SRS; the surface on the other side is the scar resulting from the removal of the burin spall, which may be designated the spall facet. Variation in the nature of the SRS permits the recognition of several different subclasses of burins, which are here called SRS types.

If the burin spall was struck from a retouched truncation—i.e., an SRS created at one end of the blank at a high angle to the ventral surface by a series of small, short, usually abrupt removals that appreciably diminish the original length of the blank—the tool is a *truncation burin*. On a *retouched edge burin*, the retouch removals comprising the SRS are located on one margin of the blank and thus do not truncate it (i.e., diminish its original length). If the SRS is formed by retouch removals that, although located at the end of the blank, effect a minor modification of the extremity without significantly truncating the blank, the tool is a *retouched end burin*. If the SRS from which the burin spall was struck is a broken surface resulting from the previous fracture of the blank, usually at a more-or-less right angle to the long axis, the tool is a *break burin*. If the burin spall is removed from a pre-existing unretouched facet—i.e., a surface already in existence at the time the blank was removed from the nucleus and not as a result of subsequent fracture of the blank—the tool is an *unretouched edge burin* or *unretouched end burin*, depending upon the location of the facet in question. The SRS of such burins is almost always a dorsal facet located at a high angle to the plane of the ventral surface of the blank, but these SRS types are used also for a special, rarely occurring circumstance described below following the discussion of dihedral burins.

On a *dihedral burin*, the burin edge is formed by the intersection of (at least) two surfaces, both of which are spall

facets. A burin spall was first removed (from a no longer existing and thus unknown SRS), and the proximal region of the resulting spall facet comprised the SRS for the removal of the final spall or spalls. The conchoidal ripple marks on the spall facets on both sides of the dihedral burin edge are concave toward that edge; both spalls were struck off from a point close to the location of the existing burin edge. If the SRS for a given burin is the *distal* region of a pre-existing spall facet—for example, one of the spall facets of a dihedral burin located at the opposite end of a blank on which several burins have been made—the burin in question is classified as an unretouched edge or end burin, not a dihedral burin.

There are, in summary, seven SRS types:

- dihedral burins
- truncation burins
- break burins
- retouched edge burins
- retouched end burins
- unretouched edge burins
- unretouched end burins

In recognition of their relative frequencies in Upper Palaeolithic assemblages, the first three are called the major SRS types, and the latter four are called the minor SRS types.

BU2: Direction of retouch creating the SRS. This attribute set applies only to truncation, retouched edge, and retouched end burins. The retouch creating the SRS may be either obverse or inverse.

BU3: Secondary modification of the SRS. The SRS of some burins has been slightly modified, presumably to remove some small irregularity that would hinder the creation of the burin edge, at an intermediate stage of the manufacturing process. What is here called secondary modification took place after the SRS was created (or chosen) but before the burin spall was struck from it. *Truncation modification*, recognizable on dihedral, break, unretouched edge, and unretouched end burins, consists of one or several small retouch removals appearing on the otherwise unretouched SRS. *Dihedral modification* is recognizable on resharpened examples of burins of all SRS types except dihedral burins. A small removal (rarely several) struck from the spall scar of the original burin is visible on the SRS, but its point of impact has been removed by the resharpening spall. Both kinds of modification affect only a part of the burin edge, not its entire width, and both bring about a very minor modification of the shape of the edge without reducing its width. The three attributes of this set are, then, truncation modification, dihedral modification, and no modification.

BU4: Tertiary modification of the burin edge. Modification made *after* the removal of the burin spall is called tertiary modification (Movius and David 1970). It consists of one or several small removals struck from the spall scar and appearing on the SRS. The points of impact (negative bulbs) for these removals are clearly visible. If the tertiary modification is extensive, the removals may extend from the SRS onto the dorsal surface just below the burin edge. Unlike the secondary modifications described previously, tertiary modification significantly alters the properties of

the burin edge, usually thinning it or bevelling it. The attribute set is dichotomous, tertiary modification being either present or absent.

BU5: Burin angle. The burin angle is the angle formed by the intersection of the SRS and the spall facet or facets, all of which are considered for measuring purposes to be plane surfaces. The angle measured extends from the intersection (the burin edge) to a maximum distance of five mm in either direction. Although the angular relationship may change greatly at a greater distance from the burin edge, the burin angle measured concerns only that part of the tool that would have been in most direct contact with the material being cut, grooved, or gouged by the burin edge. The measurement is made, to the nearest 5°, by sighting the profile of the angle while the burin is held against a ruled goniometric card (Movius et al. 1968: 27, Figure 14). The sighting is made perpendicular to the major spall facet. In practice, burin angle may vary greatly along a single burin edge if that edge is very wide, formed by several removals, and/or of complex shape; the aim of the measurement of burin angle is to obtain the *sharpest* reading that is valid for *most* of the edge.

BU6: Burin edge width. Burin edge width is the straight-line distance, measured to the nearest millimeter with sliding calipers, between the intersection of the burin edge with the ventral surface and its intersection with the dorsal surface (Movius et al. 1968: 27, Figure 14), ignoring any angulation or curvature of a nonstraight edge.

BU7: Burin edge shape. Variation in the shape of the burin edge is codified into the six shape attributes defined and illustrated by Movius et al. (1968: 26–28 and 29, Figure 15). A *straight* edge, which may be formed by one or more spall facets, does not depart from a straight line more than is caused by the conchoidal fracture of the raw material. An *angulated* edge is always polyhedral (formed by two or more spall facets), and the two removals or sets thereof lie in two different planes. The removals of a *curved* edge, which is always polyhedral, lie in several different planes and cant progressively toward either the dorsal or the ventral surface such that the line of edge is approximately one-quarter of a circle. A *rounded* edge is a more extreme example of the same general morphology, with removals canting toward both surfaces of the blank and describing an approximate semicircle. All these shapes are described as they appear when the SRS is viewed directly from above. A fifth shape attribute, *bevelled*, describes an inclination of the burin edge toward the dorsal surface when the edge is viewed from the spall facet side (rather than from the SRS side, from which the edge appears straight). Bevelled edges are found almost exclusively on truncation, retouched edge, and retouched end burins; if the retouch creating the SRS is only semi-abrupt, the angle between the SRS and the ventral surface is then significantly less than 90°, and a bevelled edge results. An *irregular* edge, described once again as viewed from the SRS side, may be formed by one or several removals; this is a residual attribute used for edges that do not conform to any of the definitions given above.

The determination of burin edge shape of dihedral bu-

rins poses a special problem. It is quite possible, for example, for the SRS of a dihedral burin to consist of two major removals each lying in a different plane, whereas the other side of the burin edge is formed by a single major facet. If one determined the edge shape of such a piece by viewing the SRS directly from above, the shape would be “straight,” but if viewed from the spall facet side, it would be “angulated.” In order to maintain the comparability needed for the attribute study of a total burin series, the edge shape attribute of dihedral burins is recorded as the most complex regular shape present *regardless* of which side of the edge constitutes the SRS side (for the example discussed above, edge shape would be recorded as angulated).

BU8: Number of burin removals. For all SRS types except dihedral burins, attribute determination for this set is simply a count of the number of “significant” spall facets that intersect to help create the burin edge. By “significant” spall facets are meant: a) large removals, true burin spalls, whatever their effect upon the shape of the burin edge; and, b) relatively smaller removals that play a major role in the creation of a nonstraight edge shape despite their smaller size. For dihedral burins, the relevant attribute is the greater number of significant removals on *either* side of the burin edge (for example, if the SRS side had three significant removals and the other side had only a single spall facet, the number of burin removals would be recorded as three).

BU9: Pattern of dihedral burin removals. This attribute set, which is applicable only to dihedral burins, describes their more complex variation in a more detailed fashion. It combines set BU8, above, with two other (not formally codified) dimensions of variation: a) the *side* of the edge (the left or right when the burin is lying on its ventral surface) on which the removals in question are located; and, b) the *order* of the removals, whether left side first, right side first, alternating, or indeterminate.

BU10: Thinning removals. A wide, flat removal struck from the SRS, appearing on and nearly in the same plane as the dorsal or the ventral surface, located immediately adjacent to the burin edge and intersecting it in such a way as to delimit it or diminish its width, is designated a thinning removal. Such removals, which are not regarded as true burin removals, have the effect of thinning the blank in the immediate vicinity of the burin edge. The set is dichotomous, thinning removals being present or absent.

BU11: Nature of obliquity. This attribute set is closely related to burin edge shape (set BU7, above). On burins with *simple obliquity*, all the spall facets that create the burin edge lie in essentially the same plane; on burins with *complex obliquity*, the spall facets lie in two or more distinctly different planes. Dihedral burins once again pose a special problem. If the removals on one side of the edge of a dihedral burin exhibit complex obliquity whereas those of the other side exhibit simple obliquity, the obliquity is recorded as complex regardless of which side constitutes the SRS.

BU12: Maximum ventral canting. The five attributes of this set and the measurement techniques employed are discussed and illustrated by Movius et al. (1968: 30–33). The degree of canting or obliquity of a spall facet is determined

by measuring the angle between that facet and the ventral surface. The measurements, which may be made using a special goniometer (1968: 31, Figure 16) or a goniometric card, is recorded in terms of five classes, as follows:

- <75°: Dorsal oblique (canting toward the dorsal surface)
- 75°–104°: Lateral (ca. normal to the ventral surface)
- 105°–134°: Oblique (moderate canting toward the ventral surface)
- 135°–154°: High oblique (pronounced ventral canting)
- >154°: Flat-faced (extreme ventral canting)

The attributes of this set (dorsal oblique, lateral, etc.) are used to describe pieces with both single and complex obliquity; for the latter, although both extremes of the range are recorded for each burin edge (for example, lateral to high oblique), only the maximum ventral canting (high oblique in the example cited) is used in the analysis.

BU13: SRS assignment. This attribute set, which applies only to dihedral burins, is a modifier of sets BU14 and BU15, below. On nonmedian dihedral burins (set BU16, below), if the SRS is on the right side of the burin edge and if the edge is located to the left of the median line (or if the SRS is left and the edge is right), the SRS angle is almost always morphologically analogous to that of other SRS types. It is therefore measured, and the shape of the SRS is recorded. If, however, the SRS and the edge are both right (or left), the non-SRS angle is measured and the non-SRS shape is recorded because it is this removal or set of removals that is morphologically analogous to the SRS of other SRS types. The greater complexity of dihedral burins requires, once again, a special procedure in order to maintain the comparability needed for the attribute study of a total burin series.

BU14: SRS shape. The shape of the SRS is measured by determining the ratio between the lengths of two straight lines (Movius et al. 1968: 19, Figure 11). The longer line, the base line, connects the burin edge with *either* the intersection of the SRS and the opposite margin of the piece (if the line of the SRS is straight or a simple curve) *or* the first major break in line of the SRS away from the burin edge (if the SRS is complex, recurved, irregular, etc.) (1968: 35, Figure 20). The shorter line is a perpendicular erected upon or dropped from the base line to the point of maximum deviation of the SRS from the base line. The measurements are read directly by placing the burin on a piece of millimeter paper. The five attributes of this set are based on the direction of deviation from the base line and its magnitude, as determined by the ratio of the shorter to the longer line:

- very concave:  $\geq 1:9$
- concave:  $>1:20$  but  $<1:9$
- straight:  $\leq 1:20$
- convex:  $>1:20$  but  $<1:9$
- very convex:  $\geq 1:9$

For some dihedral burins (as determined by set BU13), the shape of the removals on the non-SRS side of the burin edge is recorded.

BU15: SRS angle. The SRS angle (Movius et al. 1968: 35–36) is the angle between the “base line” described above

for set BU14 and the working axis of the burin. It is measured to the nearest 10° on a goniometric card (1968: 19, Figure 10). For some dihedral burins (as determined by set BU13), the non-SRS angle is measured.

BU16: Lateral position of the burin edge. With the burin oriented in its working axis, its total width may be divided into five zones of equal size proceeding from left to right (Movius et al. 1968: 34, Figure 18). The location of the burin edge in one of the five zones determines its lateral position as either left lateral, left asymmetrical, median, right asymmetrical, or right lateral. This attribute set does not control the angle of either the SRS or the spall facet(s), and the distinctions it makes among dihedral burins are not the same as those dealt with by Types 27, 28, and 29 of the typology of de Sonneville-Bordes and Perrot (1956a: 408).

BU17: Bulbar position of the burin edge. The location of the burin edge with respect to the bulbar axis is recorded as distal, proximal, on the side of the blank, or indeterminate. (The “side” attribute is used here because of the frequent irregularity of burin blanks at Les Tambourets.)

BU18: Transversality. If the axis of the burin spall facet or facets is at approximately a right angle to the bulbar axis of the blank, the burin is said to be transverse. Dihedral burins are considered to be transverse if either the SRS removals or the spall facets are at a right angle to the bulbar axis. The attribute set is dichotomous.

BU19: Tool disposition. This set specifies how many tool edges of what kinds are mounted on the blank in question. A *single* burin is the only tool found on the blank. A *double* burin bears two burins of the same SRS type at opposite ends of the blank. On a *multiple* burin, two burins of the same SRS type are located at opposite sides of the same end of the blank. *Triple* and *quadruple* burins have, respectively, three and four burins of the same SRS type on one blank. A *mixed* burin bears two or more burins of different SRS types on the same blank. A *combination tool* has at least one burin and at least one example of some other tool on the same blank.

BU20: Corner position of the burin edge. In order to investigate patterning in the positioning of more than one burin edge on a single blank, each of the four possible “corners” or quadrants on a blank is designated by a letter—“A” for the upper left or ‘northwest’ corner, “B” for the upper right (NE), “C” for the lower left (SW), and “D” for the lower right (SE). This orientation scheme is not related to the bulbar axis of the blank, which may be indeterminate, and some combinations are, therefore, equivalent to others if the piece is turned 180° (e.g., AB=CD, AC=BD, etc.). Although this attribute set is applicable to all burins, it is used in the analysis of nonsingle burins only.

BU21 through BU26. These burin attribute sets are identical to previously defined non-class-specific sets, as follows: BU21 = NS1; BU22 = NS2; BU23 = NS3; BU24 = NS6; BU25 = NS7; BU26 = NS8.

BU27: Near-burin-edge thickness. Near-burin-edge thickness is the maximum thickness of the blank within 10mm of the burin edge. It is measured to the nearest millimeter with sliding calipers at a right angle to the plane of

the ventral surface at the point of measurement. This attribute is measured for each burin present on a given blank.

BU28: Positive hinge spall. A positive hinge spall is the product that results from one kind of error in the manufacture of a burin. If the blow intended to remove a burin spall is struck with too much force and/or if the point of percussion is too distant from the edge of the blank, the line of fracture may recurve across the width of the blank, cutting it in half, rather than curving out to the margin to effect the removal of the spall. Of the two pieces resulting from such a mishap, the one bearing the burin edge is called a positive hinge spall. Depending upon its length and other characteristics, it may or may not have served as a functioning burin. The attribute set is dichotomous; a given burin either does or does not appear on a positive hinge spall.

BU29 through BU36. These burin attribute sets are identical to previously defined non-class-specific sets, as follows: BU29 = NS9; BU30 = NS10; BU31 = NS11; BU32 = NS12; BU33 = NS13; BU34 = NS14; BU35 = NS15; BU36 = NS16.

BU37: Stop notch. In some burin series, a retouched notch was positioned on a margin of the blank, before the removal of the burin spall or spalls, such that the line of fracture would intersect this notch and bring the burin spall to its distal termination at that point. Such a notch is called a stop notch. The set is dichotomous, a stop notch being either present or absent.

BU38 through BU43. These burin attribute sets are identical to previously defined non-class-specific sets, as follows: BU38 = NS17; BU39 = NS18; BU40 = NS19; BU41 = NS20; BU42 = NS21; BU43 = NS22.

## IX. TRUNCATED PIECES

Attribute sets TP1 through TP10 deal with variation in the truncation itself and its relationship to the blank on which it occurs. Sets TP11 through TP27 deal with variation in the blank and its nontruncation modifications.

TP1: Extent of truncating retouch. If the truncating retouch extends across the end of the blank, from one margin to another, without interruption, the truncation is complete. If only part of the end of the blank bears truncating retouch and some other part is a broken surface, the truncation is said to be partial.

TP2: Direction of truncating retouch. The truncating retouch may be obverse, inverse, or obverse/inverse. The retouch of an obverse/inverse truncation originates from the ventral face along part of the truncation and the dorsal face along some other part.

TP3: Orientation angle, and

TP4: Asymmetry direction. These two sets together measure the orientation of the truncation to the working axis of the tool; the concepts employed are the same as for end-scraper attributes ES7 and ES8, where a fuller explanation is given (see Section II, above). The attributes of TP3 are angular measurements made on a goniometric card (Movius et al. 1968: 19, Figure 10) and recorded to the nearest ten degrees. The attributes of TP4 are three: none (orientation angle = 90 degrees), left, and right.

TP5: General shape of the truncation. The general shape or margin-to-margin contour of the truncated end may be described as either simple or complex. If simple, the entire contour may be accurately characterized as concave, straight, or convex (see attribute sets TP7 and TP8, below). If complex, one portion of the line of truncation has one shape and another portion another shape, for example, the left half is straight and the right half concave, or two portions have the same shape but are separated by a clear break in line, for example, a point or salient separates a concavity on the left side from a similar concavity on the right side (Movius et al. 1968: 35, Figure 20).

TP6: Lateral position of high side of truncation. This attribute set applies only to those truncations having an orientation angle (TP3) of less than 90 degrees. If a truncation has a left asymmetry direction, the right side of the truncation may be described as the “high” side in the sense that the junction between the line of truncation and the right margin extends further anteriorly than the junction with the left margin. On a truncation with a right asymmetry direction, the “high” side is the left side.

TP7: Detailed shape of the truncation (high or only side). If the truncation in question has a simple general shape (TP5), this set applies to the entire margin-to-margin contour; if the general shape is complex, the set applies to the high side only (TP6). The detailed shape of the truncation is measured by determining a ratio, as explained in fuller detail for burin attribute set BU14 (see Section VIII, above). For truncated pieces, the terminal points of the longer or base line are either the intersections of the truncation with the margins (for those with a simple shape) or the intersection with one margin and that with the salient or break in line (for those with a complex shape). The five attributes of this set are very concave, concave, straight, convex, and very convex, all of which are defined as for set BU14.

TP8: Detailed shape of the truncation (low side). This set, which applies only to those truncations having a complex general shape (TP5), is used to describe the low side of the truncation. Its five attributes are identical to those of set TP7, above.

TP9: Bulbar position of the truncation. The location of the truncation with respect to the bulbar axis of the blank is recorded as distal, proximal, or indeterminate.

TP10: Tool disposition. This set specifies how many tool edges of what kinds are mounted on the blank in question. A *single* truncated piece has only one retouched truncation. A *double* truncated piece (or bitruncated piece) has a retouched truncation at both ends of the blank. A *combination tool* has a retouched truncation at one end and an example of some other tool class (end-scraper, burin, etc.) at a different location on the same blank.

TP11 through TP26. These attribute sets of truncated pieces are identical to previously defined non-class-specific sets, as follows: TP11 = NS1; TP12 = NS2; TP13 = NS3; TP14 = NS6; TP15 = NS7; TP16 = NS8.

TP17: Occurrence of marginal retouch. This is a dichotomous set, marginal retouch being either present or absent.

TP18 through TP27. These attribute sets of truncated pieces are identical to previously defined non-class-specific sets, as follows: TP18 = NS10; TP19 = NS11; TP20 = NS12; TP21 = NS13; TP22 = NS17; TP23 = NS18; TP24 = NS19; TP25 = NS20; TP26 = NS21; TP27 = NS22.

## X. MARGINALLY RETOUCHE PIECES

Attribute sets MR1 through MR5 deal with variation in the marginal retouch itself and its relationship to the blank on which it occurs. Sets MR6 through MR18 deal with variation in the blank and modifications to it not achieved by marginal retouch.

MR1: Portion. Based on the assumption that a complete tool element was a complete blade or flake, this attribute set specifies how much of the originally complete tool is available for study. If less than the complete tool is present, the set specifies which part of the blank remains. The set has four attributes. A piece is *complete* if it is unbroken or if it is missing such a small bit of one tip that its length and overall morphology can be securely reconstructed. If some significant part of the original blank is missing, the remaining part is classified with reference to the bulbar axis. A *distal portion* retains the original distal extremity of the blank. A *proximal portion* retains the striking platform and other features of the proximal extremity. A *segment*, terminating in a fracture at both ends, retains neither original extremity of the blank.

MR2: Marginal retouch (type). The six types of marginal retouch recognized in the study are those codified by the previously defined non-class-specific attribute set NS10 (see Section I, above). When more than one of these types is present on a single marginally retouched piece, set MR2 is coded as *mixed*, and the details of the mixture are controlled more precisely by set MR5.

MR3 through MR11. These attribute sets of marginally retouched pieces are identical to previously defined non-class-specific sets, as follows: MR3 = NS11; MR4 = NS12; MR5 = NS13; MR6 = NS1; MR7 = NS2; MR8 = NS3; MR9 = NS4; MR10 = NS5; MR11 = NS8.

MR12: Morphology of distal termination. This attribute set, which codifies variation in the shape of the original distal extremity of the blank, applies only to those pieces on which that extremity is present and unaffected by later damage or modification (a consideration particularly relevant for the Méroc surface collection). As is the case for marginal retouch type (MR2), this attribute set reduces variation of several kinds to a limited number of arbitrarily designated classificatory categories (see Table B-2). The categories are based primarily on variation in shape of the distal extremity (pointed or not pointed) and in the acuity of the extremity (steep or not steep). In some cases, a few retouch removals may contribute to the final morphology of the distal extremity, but their effect is very minor (were their effect nontrivial, the pieces would be classified as end-scrapers, retouched points, pieces lightly retouched across an extremity, etc.).

MR13 through MR18. These attribute sets of marginally retouched pieces are identical to previously defined non-

Table B-2.--Classificatory categories (attributes) of the morphology of distal termination (MR12) of marginally retouched pieces.

	<u>Pointed</u>	<u>Not Pointed</u>
<u>Steep</u>	02: naturally bluntly pointed; steep dorsal facets	10: spatulate or square-ended; steep dorsal facet(s) 11: spatulate or square-ended; steep hinge-fracture surface 12: irregular nonpointed shape; steep dorsal cortical facet
-----		
<u>Not Steep</u>	05: naturally sharply pointed 06: naturally bluntly pointed 07: bluntly pointed shape formed in small part by marginal retouch removals 08: sharply pointed shape formed in small part by marginal retouch removals	15: broad spatulate feather edge 16: irregular nonpointed feather edge 17: bluntly rounded end; natural shape or formed in small part by marginal retouch removals

class-specific sets, as follows: MR13 = NS17; MR14 = NS18; MR15 = NS19; MR16 = NS20; MR17 = NS21; MR18 = NS22.

## XI. NUCLEI

Attribute sets NU1 through NU12 have to do primarily with the removals from the nucleus, preparations for these removals, and their consequences for the morphology of the object. Sets NU13 through NU17 deal primarily with the characteristics of the raw material chosen for use as nuclei, and sets NU18 and NU19 deal with secondary use or modification of objects used originally as nuclei.

NU1: Shape of nucleus. The shaped (worked-out or exhausted) nuclei of Les Tambourets are described in terms of five general categories of shape.

The *prismatic* nucleus is the characteristic blade core of the French Upper Palaeolithic (Brézillon 1971: 92; de Sonneville-Bordes 1960: 20). Within wide limits of variability, it has approximately the form of a prism. At one end or at

each end there is a striking platform from which have been removed a series of blades or elongate flakes. The entire series of scars of such removals, approximately parallel one to another, makes up the core face for the platform in question. Most (and sometimes all) of the surface area of a prismatic nucleus that is not striking platform is composed of core face or faces, which tend to "wrap around" the sides of the prism; exceptions are usually complexly patterned *crête* areas (see attribute set NU7, below) or areas of cortex on the back of the nucleus.

The *flat* nucleus is closely related to the prismatic variety and may often be nothing more than a formerly prismatic nucleus in a more advanced state of blank removal. The scars of the core face lie in what approximates a flat plane rather than wrapping around to form the sides of a prism. The transverse or side-to-side measurement across the removal scars is greater than the face-to-back measurement.

The *tabular* nucleus is similar in overall shape to the flat variety, but the relative location of the core face differs. The face-to-back dimension is here greater than the side-to-side dimension. The face is narrow, composed of only a few removal scars, and it does not wrap around the sides of the piece to any great extent. Most tabular nuclei have only one striking platform.

The *pyramidal* or conical nucleus (Bordes and Crabtree 1969: 2, 14; Brézillon 1971: 93; de Sonneville-Bordes 1960: 20) has only one striking platform, the base of the pyramid or cone. The core face wraps around all or most of the circumference, and the distal ends of the removals converge to form a point or short ridge at the end of the nucleus opposite the platform.

“*Irregular*” is a residual category used to describe nuclei that do not have one of the four shapes mentioned above. In some cases, the irregularity is a result of the presence of much of the original shape of the unaltered, cortical nodule. In other cases, the irregularity is caused by the core faces of multiple platforms meeting at irregular and divergent angles. Where the presence of multiple platform/core-face sets has produced an approximately equidimensional nucleus, the term “*globular nucleus*” is sometimes employed (Brézillon 1971: 90), but such examples are included here as irregular.

NU2: Number of platforms. A striking platform is a prepared, more-or-less flat (plain or faceted) surface from which blades or flakes appropriate for use as tool blanks have been removed. Attributes of the set consist of a simple frequency count of the number of platforms present on a given nucleus—usually one, two, or three.

NU3: Multiple platform arrangement. This attribute set applies only to nuclei having two or more platforms (NU2 >1). Six different patterned arrangements are recognized; the first three patterns apply only to nuclei having two platforms, and the last three apply to nuclei with three or more platforms. For ease of reference, each platform is given a short coded designation.

The “A2” pattern is present when: a) the nucleus has two platforms located at directly opposite ends of the piece; and, b) the removals made from each platform (= the core face for each platform) are located on opposite sides such that there is little or no overlap or meeting of the two sets of removals. The two sets of removals are, nevertheless, essentially parallel one to the other. Nuclei with this platform arrangement have been called “*bidirectional opposite alternate*” nuclei by Bordes and Crabtree (1969: 2, 14, Figure 1b).

The “O2” pattern is present when: a) two platforms are located at opposite ends of the nucleus (as above); and, b) the removals from each platform, which are located on the same side of the piece, meet and/or overlap on a single, shared core face.

On nuclei with the “C2” pattern, the removals from two platforms, which are not located at directly opposite ends of the piece, intersect or cross each other at a high angle.

The “C3” pattern is similar to the C2 pattern except that three (or more) core faces are involved in high-angle intersections.

On nuclei with “A2+” or “O2+” patterns, two of the three (or more) core faces conform to the A2 or O2 patterns as defined above, but an additional face (or faces) crosses one or both of them at a high angle.

NU4: Platform angle. The platform angle is a generalized approximation, recorded to the nearest ten degrees, of the *smallest* (sharpest) angle between the surface of the platform in question and the core face resulting from that platform’s use. Only the portion of the platform surface immediately adjacent to its junction with the core face is considered for this measurement. Furthermore, only that portion of the removal scar on the core face that is located a centimeter or so below the face/platform junction is considered, thus discounting the slightly sharper angle produced by the presence on the face of the negative bulb or the somewhat duller angle produced by regularization of the face/platform junction after the last removal had been made. Platform angle is measured, to the nearest ten degrees, by comparing the profile of the piece, at the spot chosen, with a ruled goniometric card.

NU5: Platform regularization removals from the platform. It is well understood from a number of modern experiments (for example, those reported by Bordes 1967) that the successful *consecutive* removal of blanks from a prepared Upper Palaeolithic nucleus often requires the use of some procedures between episodes of blank removal that will render the platform, the core face, or both more amenable to further work. Such procedures remove irregularities or ameliorate mechanically deleterious effects of previous operations. Platform regularization removals originating from the platform, which modify the platform/core-face junction, appear on the core face, in the proximal ends of the concavities of the negative bulbs and on the pointed salients between these concavities. The modification takes various forms—discrete retouch removals, small chipping resulting presumably from deliberate crushing (*écrasement*, *frottement*), rough stepped removals resulting from battering, or any combination of these. The effect of platform regularization removals from the platform is to dull somewhat the sharp edge resulting from previous blank removals and to reduce the sharp salients between negative bulb concavities, thus creating a thicker, stronger edge for the next removal. The importance of this kind of regularization is described by Bordes (1967: 44), and its effects on the nucleus are well illustrated (1967: 43, Figures 5-7 and 5-11). Attribute set NU5 is dichotomous, platform regularization removals from the platform being either present or absent.

NU6: Platform regularization removals from the face. Another way of regularizing the platform between episodes of blank removal involves very small removals originating from the core face, just below the previously existing face/platform junction, and appearing as a series of short, narrow scars on the platform, extending back just a few millimeters from the new junction created by these removals. Bordes (1967: 44) has described and illustrated such modification as an efficacious ancillary to the use of the punch technique for blade detachment, but platform regularization from the face should not be thought of as limited to

techniques employing a punch. The removal scars appearing on the platform of the *nucleus* may be sufficiently small that part of this modification is visible as fine faceting on the platform of the *blank* subsequently detached from that limited region of the platform. Attribute set NU6 is dichotomous.

NU7: Occurrence of large facets on platform. Major removals struck from the core face (or some previously existing version of it) result in the presence on the platform of flake scars much larger than those discussed above for attribute set NU6. Although any single such scar accounts for only a portion of the platform's area, the presence of several scars may create a platform composed entirely of large facets lying in similar but not identical planes. The use of large-scale faceting may be part of the original preparation of the nucleus for blank removal, or it may be a technique for regularizing or rejuvenating a platform after a number of blanks have already been detached from the nucleus. In the latter case, the flakes whose removal creates the broad faceting of the platform would be functionally similar to core-tablet trimming flakes (Brézillon 1971: 98–99), but they would have removed only a part of the original platform. The individual facets on the platform of the nucleus are sufficiently broad that only rarely is their presence discernible on the platforms of blanks struck from such nuclei. Attribute set NU7 is dichotomous.

NU8: Occurrence of a *crête*. A *crête* is a ridge created by retouch, often on a side or toward the back of a nucleus but adjacent to a core face. It is made up of short removals oriented at a high angle to the long axis of the removals on the face even though the axis of the *crête* is essentially parallel to the scars of the face. The creation of *crêtes*, of varying kinds and in various locations on the core, facilitated the successful detachment of blanks in different ways depending on the techniques used, sometimes as core rejuvenation and sometimes as initial core preparation (Bordes and Crabtree 1969: 4; Brézillon 1971: 96–98). For the exhausted nuclei from Les Tambourets that are of relevance to this study, it is primarily rejuvenation or rectification that is at issue. The *crête*, often of limited extent, appears to have regularized the shape of the nucleus in some fashion so that blanks detached subsequently would not be flawed by morphological irregularities that had developed in the course of previous working. The efficacy of such *crêtes* is, of course, evaluated primarily from the nature of the *lames à crête* in the assemblage rather than from a study of exhausted nuclei on which a *crête* is still present. Attribute set NU8 is dichotomous.

NU9: Positive hinge. One kind of failed attempt to detach a blank from a nucleus results when the detaching force (misapplied) fails to exit the mass at the end opposite to the platform or somewhere on the core face, but rather curves back through the mass, radically truncating the nucleus. Of the two pieces resulting from such an accident, the one containing the greater part of the platform is called a positive hinge. Depending on its dimensions, it may be discarded or it may be used further. The attribute set is dichotomous.

NU10: Maximum length. Maximum length is defined as the greatest linear dimension of the piece parallel to the proximal-distal length of the longest removal or set of removals on the nucleus. Where two or more platforms and hence sets of removals occur on the same piece, only the longest set is considered for the measurement of length.

Maximum length of the nucleus is equivalent to the length of the longest removal made from that nucleus only if the longest removal scar is complete, if it extends completely from the platform to the opposite extremity, and if the morphology of the nucleus is quite regular. These conditions are rarely met in practice, and maximum length of the nucleus is usually somewhat greater than the length of the longest removal. As such, maximum length is a rough estimate of the longest blank that *might* be produced from an existing platform of the nucleus in its present (presumably exhausted) state. In light of the assumption that most nuclei were originally larger than at the time of study, maximum length may be seen as a *minimum* estimate of the *maximum* blank-length potential for each nucleus.

Maximum length is measured, to the nearest millimeter, with sliding calipers. In those cases where irregularities exist on either the platform or the opposite extremity, the calipers are placed so as to maximize the measurement while remaining always parallel to the longest removal.

NU11 and NU12: Maximum width and maximum thickness. Because these dimensions are defined quite arbitrarily in the attribute system employed here, their analytic utility is limited. For all nucleus shape categories *except* “tabular”, which is discussed separately below, maximum width is defined as the greater of the two possible dimensions lying in a plane at a right angle to the plane in which maximum length was measured. Maximum thickness is, then, the remaining dimension, measured in a plane that is normal to the planes of both maximum length and maximum width.

Despite the geometric arbitrariness of these definitions, there is a high degree of functional homology among the dimensions (with respect to the relative positions of the core face with the longest removals, its platform, the sides of the nucleus, etc.) for most prismatic, pyramidal, and flat nuclei and for many of the irregular nuclei. This is not the case, however, for tabular nuclei. In order to give any meaning to comparisons of width and thickness among shape categories, the “width” of tabular nuclei must be a side-to-side dimension and “thickness” must be a face-to-back dimension. Therefore, for tabular nuclei, maximum width is the lesser of the two dimensions referred to in the paragraph above, and maximum thickness is the greater dimension.

For all shape categories, maximum width and maximum thickness are measured, to the nearest millimeter, with sliding calipers.

NU13: Nature of nucleus. Although the terms “nucleus” and “core” are often used interchangeably, some nuclei are in fact thick flakes, as demonstrated by the remaining presence of part of the ventral surface. Other nuclei, on which no remnant of a ventral surface can be found, must be regarded as truly core objects (and most are probably

what remains of nodules from which blanks have been removed). The attribute set has, then, two attributes: core and flake.

NU14: Occurrence of cortex. The occurrence of cortex on nuclei is recorded in terms of an estimated “cortex score” for each piece, an ordinal variate defined as follows:

- 0 - No cortex is present.
- 1 - Cortex is present, but it covers less than 50% of the surface area.
- 2 - Cortex covers 50% or more but less than 75% of the surface area.
- 3 - Cortex covers 75% or more of the surface area.

NU15: State of the raw material. The set has three attributes: fresh, rolled, and indeterminate. The “rolling” of concern here is a modification of the object by natural forces prior to its (last) use as a nucleus. An object is considered to have been rolled if: a) its edges and protuberances are abraded, rounded, etc.; b) the cortex is generally worn smooth or, in some places, completely worn off; or, c) areas of previous flake removal (not necessarily a result of human intervention) are worn smooth, abraded, polished, etc. In the absence of these indications and the presence of cortex or double patination, the nucleus is considered to be fresh. The nature of nuclei without cortex or double patination is indeterminate.

NU16 through NU18. These nucleus attribute sets are identical to previously defined sets, as follows: NU16 = NS17; NU17 = NS18; NU18 = NS19.

NU19: Secondary use as tool. When a nucleus had been reduced to a size where further blank removal was apparently deemed infeasible, it was sometimes put to some secondary use before being discarded finally. Three major kinds of secondary use may be recognized:

- secondary use of the platform/core-face junction;
- secondary use of a side or previously unworked end or protuberance as a “blank” for a retouched tool; and
- secondary use of the entire object.

On many nuclei, particularly those of prismatic shape, the junction between a platform and its core face has a morphology similar to that of a steep scraper *except* for the presence of sinuous irregularities. The reduction or elimination of these irregularities can produce an edge very similar to that of a steep end-scraper, and it has long been considered that some nuclei were put to such secondary use. In this study, a nucleus is considered to have been secondarily used as a *rabot* if: a) the greater part of the platform/core-face junction has been modified to remove almost completely any sinuous irregularity resulting from blank removal; and, b) this edge shows under low (7X) magnification some traces of rounding and/or polish. If the mor-

phological condition described above applies but low-magnification evidences of wear are not present, the nucleus is said to possess “scraper morphology.” If, on the other hand, morphological modification to remove sinuosities and rounding wear are present on only part of the platform/core-face junction, the nucleus is said to possess “partial scraper morphology.” Despite these indications of possible (or probable) secondary use as scrapers, the objects in question are retained in the nucleus sample and are not studied as scrapers.

All or part of a platform/core-face junction may have a morphology similar to that of a burin with a wide edge. This is particularly likely in the case of tabular nuclei, whose core faces and the (few) removals of which they are comprised tend to be narrower than those of other nucleus shapes. When the morphological resemblances to burins are very close, nuclei are considered to be possible “nucleiform burins,” but they are not included in the burin series for purposes of attribute analysis.

Because of the thickness and other characteristics of objects that were used as nuclei, it is rare that they could be secondarily used as “blanks” for retouched tools. When some edge or protuberance was so modified, it was most often retouched into some sort of scraper. Such an object is considered a combination tool (for example, nucleus + side-scraper).

Secondary use of the entire object first used as a nucleus is almost always a question of using the piece as a flint hammerstone. Use as a hammerstone is indicated by the presence on some ends or protuberances of abrasion, crushing, and minute fracturing that cannot be attributed more reasonably, on the basis of the condition of the rest of the object, to rolling.

## ENDNOTES

1. Retouched flint tools are considered to result from the application of some modifying retouch to a “blank.” The blank is the blade, flake, or chunk to which a scraping edge, burin edge, etc. was applied, completing the manufacturing process and transforming an undifferentiated intermediate product into a finished tool.
2. The differences among bulbar, long, and working axes are explained and illustrated by Movius et al. (1968: 32–33) with reference to burins, but the same concepts are useful for other artifact classes. Except for a few special cases (e.g., so-called “transverse burins,” bulbar axes and working axes are essentially parallel.
3. The terms “anterior” and “posterior” are used to avoid implications concerning the bulbar orientation. Although for most blade and flake tools in this study the retouch creating the tool has been applied to the distal end, this is not always the case. The anterior end of an end-scraper blank is the end bearing the scraping edge, whether that end is distal or proximal.
4. “Acute” is obviously a misnomer in that *all* angles less than a right angle are acute. The intent is to characterize angles of 50° or less as in some sense sharp.

## APPENDIX C

## SORTING VARIETIES OF FLINT

The flint varieties described in this appendix were defined strictly as *sorting varieties* for use with the flint objects excavated from Les Tambourets. Because the overwhelming majority of flint artifacts are completely and heavily patinated, a classification that was to be useful for sorting *all* flint objects had to be based primarily on the color of the patina, as this classification is. Broken or damaged artifacts on which the unpatinated interior is exposed show quite clearly that identical patination has developed on flints of very different base colors. There is, then, no *necessarily* close relationship between the sorting varieties described here and chemically or paleontologically different varieties of flint of different geological ages and proveniences.

All sorting of flint objects was done in sunlight (not incandescent or fluorescent lighting), and the colors used in the descriptions are those appearing in sunlight. The color photographs that are referred to in this appendix were taken outdoors, in sunlight. Two or more artifacts that serve as good examples of each sorting variety but that are not illustrated here are referred to by catalogue number in each description. Some of the artifacts referred to, those excavated in 1980, are shown in the color photographs. The photographs do not include objects excavated in 1973 or 1975. In addition, the two-digit code number designating flint variety is part of the permanent catalogue record for each flint object recovered in excavation.

In November 1990, the Tambourets classification was considered critically by Monsieur Robert Simonnet, then the Conservateur du Musée d'Aurignac. Simonnet had made an exhaustive study of the flint sources of the Petites-

Pyrénées region. Indeed, he had previously examined the flint industries of Les Tambourets, both those collected by Méroc and those excavated by Bricker. During a meeting between Simonnet and Bricker in Toulouse on 10 November 1990, the color photographs of Tambourets artifacts mentioned above were examined, as were flint objects from various sites in the Petites-Pyrénées in Simonnet's collections. In addition, the results of Bricker's 1977 field prospecting (Appendix D) were discussed and compared with Simonnet's more extensive research. Any clear and unambiguous correspondences between Simonnet's classification and the classification developed earlier for use at Les Tambourets are mentioned below.

\* \* \* \* \*

## 11 VOLP WHITE (VW)

This sorting variety (Figures C-1 and C-2) is defined by the patination, which is a cold (bluish) white in its most advanced state. This kind of flint is among those that Simonnet (1981: 312 and personal communication, 10 November 1990) calls "le bleu," following local usage. The patination starts as white blotches on the darker background, moves through a salt-and-pepper phase, and finishes as a solid, cold, matte white. The patination defining this sorting variety occurs on several different kinds of flint with at least three different base colors:

- dark gray to dark bluish gray (cf. flake scraper #434 and nucleus #323);
- translucent, very light greenish brown (cf. *couteau à dos naturel* #548 and notched blade #149); and,
- honey-colored (even though the base color is a



Figure C-1. Flint varieties 11 (VW; Volp White); 12 (VWW; Volp White Waterstained); 13 (WTV; White-and-Tan Variegated), and 14 (TG; Translucent Gray).



Figure C-2. Flint variety 11 (VW: Volp White).

warm tan, the patination is a cold bluish-white) (cf. burins #13 and #79 and splintered piece #558).

Because the great majority of pieces are so patinated that the base color cannot be determined, it is not possible to make a consistent subdivision of the Volp White variety. Additional examples of Volp White are: unretouched chunk #5252, unretouched blades #5278 and #5329, and unretouched flakes #5227, #5275, #5283, #5285, and #5306.

Volp White and the closely related sorting varieties 12, 13, and 14, described below, comprise the raw material for almost three-quarters of the artifacts excavated from Les Tambourets. This flint came from bedrock of Danian (Paleocene) age, and it occurs today very close to the site, in the valleys of the Tounis and Quère streams, as discussed in Chapter 13.

## 12 VOLP WHITE WATERSTAINED (VWW)

The significant feature of the patination of this sorting variety (Figure C-3) is a dark (bluish-gray) band or border just under the cortex and surrounding the cortex-like impurities within the body of the nodule (cf. splintered piece #343, unretouched chunk #5661, and unretouched flake #5177). The effect of this feature is to make the pieces appear to have been stained by drops and blotches of water. The rest of the patination is the cold, matte, bluish-white like that of the VW variety (11). This flint is included in what Simonnet calls “le bleu” (Figure C-1). Base color varies as for VW (11).

## 13 WHITE-AND-TAN VARIEGATED (WTV)

The defining feature of this sorting variety (Figure C-4) is the heterogeneity of both the patination and the base color. Both white and tan patination exist on the same piece, usually in a complex variegated pattern (cf. unretouched chunk #5851, unretouched blade #5331, and unretouched flakes #5270, #5272, and #5320). At one extreme, the tan or light brown occurs as restricted marbling (cf. scraper #468

and unretouched blade #678). At the other extreme, the different elements occur as discrete masses, and the effect is similar to that of a conglomerate (cf. splintered piece #72 and nucleus #70). The hue of a given piece may appear to be either warm or cold, depending on which patination—tan or white—predominates (the white patination is a cold, bluish white). Impurities within the flint are fairly common. Although WTV is a distinct sorting variety, some pieces (cf. nucleus #298 and unretouched chunk #290) demonstrate that it is in fact the same flint as Volp White (11) (see Figure C-1); the pieces in question have both VW (not variegated) and WTV facets. For Simonnet (personal communication, 10 November 1990), this particular variety of “le bleu” is what he calls “le mixte de Saint-Michel.” Unpatinated base color varies from dark gray to honey-colored.

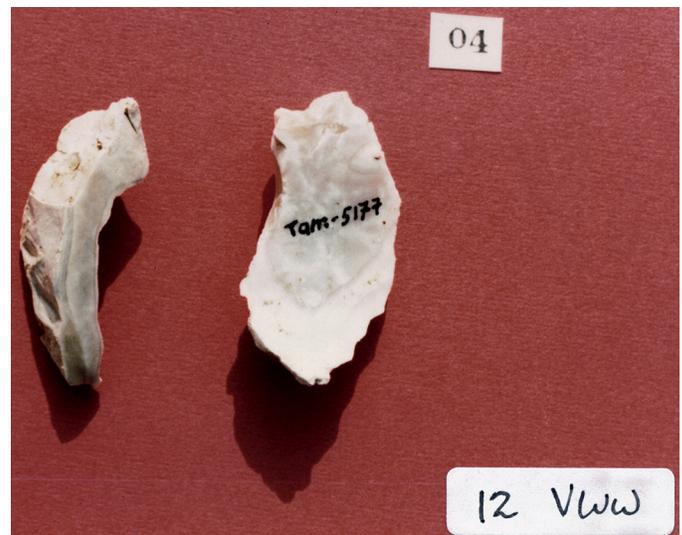


Figure C-3. Flint variety 12 (VWW; Volp White Waterstained).



Figure C-4. Flint variety 13 (WTV; White-and-Tan Variegated).

#### 14 TRANSLUCENT GRAY (TG)

This sorting variety (Figure C-5) is defined on the characteristics of the unpatinated base material, which has a translucent gray color and is slightly grainy (cf. miscellaneous retouched piece #5393 and unretouched flake #5246). If partial patination is present on a given piece, it is identical to the cold bluish-white found on the VW (11) variety (cf. unretouched chunk #475 and unretouched flake #757). There is no doubt that the TG sorting variety is the same flint as some included in the VW (11) sorting variety, and for Simonnet it is just another kind of “le bleu” (see Figure C-1). Some pieces (cf. nuclei #332 and #529) are composed in part of a dark gray, grainless flint that could be assigned to the VW variety and in part of a translucent, light gray, slightly grainy, virtually unpatinated flint that is typical of the TG variety.



Figure C-5. Flint variety 14 (TG; Translucent Gray).

#### 21 WARM BUFF (WB)

This sorting variety (Figure C-6) is defined by the patination, a very uniform light buff of warm hue. The occurrence of banding, speckling, or mottling is minimal, but reddish-brown spots, gray mottles, and deeper buff banding do occur (cf. nuclei #681 and #5148, end-scraper #753, backed blade #458, burin #453, notched flake #6259, and unretouched flake #5298). This variety seems to be a flint of excellent quality, virtually devoid of the flaws and impurities that occur so frequently in the VW 11 variety. Base color, where determinable (cf. burin #453), is a light pearly gray, very similar to but slightly colder than the color of the patination.

#### 22 MOTTLED BROWN (MB)

The patinated appearance of this sorting variety (Figure C-7) is mottled or irregular, with light buff-to-cream mottles over a light grayish-brown background (cf. nuclei #6302 and #6647, burin #265, backed tool #552, unretouched chunk #5248, and unretouched blade #5300). The hue is warm, and the sorting variety is distinct from the cold-hue Volp White. For Simonnet (personal communication, 10 November 1990), this is the “Ausseing/Montsaunès” flint. It seems probable that this sorting variety is really the same kind of flint as WB (21)—for example, unretouched chunk #380 appears to be MB at one end and WB at the more heavily patinated other end. The quality of the MB flint seems to be quite high, and internal impurities are virtually absent. Base color is not known.

It is likely that sorting varieties 21 and 22, which are almost certainly the same kind of flint, came from bedrock of Maestrichtian (Cretaceous) age, which occurs today southwest of Les Tambourets, near the village of Ausseing, as discussed in Chapter 13.

#### 23 GRAY-TAN (GT)

This sorting variety (Figure C-8) has a light gray base that



Figure C-6. Flint variety 21 (WB; Warm Buff).



Figure C-7. Flint variety 22 (MB; Mottled Brown).

often contains lighter gray mottles that are amorphous and indistinct. The base hue is cold. It patinates to a creamy tan, and the mottling is still visible. The patination sometimes attains a chalky appearance, in which case the surface texture is slightly matte. The usual surface texture (of unpatinated or lightly patinated examples) is smooth to semi-lustrous. Gray-Tan differs from Volp White (11) in that the hue is warm, the patination is not *bluish-white*, the mottling is less distinct, and the flaking quality is generally better (the photograph of Figure C-8 includes two pieces of Volp White, #5227 and #5278, for comparison). It differs from Warm Buff (21) and Mottled Brown (22), both of which it resembles to some extent, in that the hue is cooler (the color of the patina contains considerably less red). Examples of this sorting variety include marginally retouched

blade #1587, *bec* #1601 (semi-lustrous), flake scraper #2045, notched flake #2260, truncated blade #2970, and denticulate flake #3891 (matte patina), and unretouched flakes #5250, #5257, #5258, #5268, and #5564.

### 31 LAMINATED GRAY (LG)

The distinctive feature of this sorting variety (Figure C-9) is the presence of narrow but very distinct laminae that patinate various shades of gray to gray-brown, from light to dark (cf. nucleus #444, backed bladelet #333, and burin #6164). The base color is apparently a slightly warm brownish gray, but the hue of the lighter patination is cold.

### 32 GRAINY PEARL (GP)

This sorting variety (Figure C-10) is defined by texture

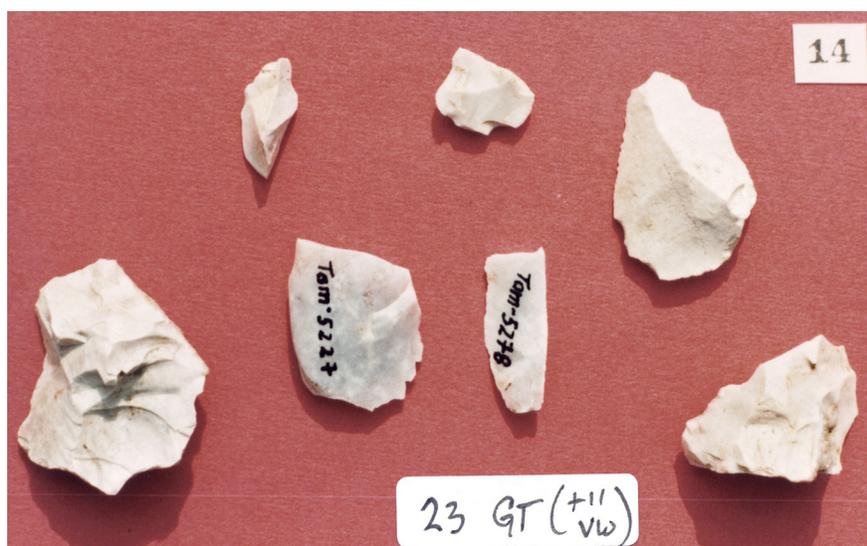


Figure C-8. Flint variety 23 (GT; Gray-Tan), compared with two pieces of flint variety 11 (VW; Volp White) in center of layout.

(slightly grainy) and color (an *opaque*, dirty white to pearly gray). It is distinguished from TG (14) by its opacity and from GB (33) by its lighter color (cf. unretouched flakes #125, #608, #6220, #6303, and #6631). The relationship between patination (if any) and base color is unknown.

### 33 GRAINY BROWN (GB)

This sorting variety (Figure C-11) is defined by its texture (slightly grainy) and its color (a mottled brown, varying from dark yellow-brown to dark brown) (cf. unretouched flakes #47, #260, #6317, and #6620). All pieces are cortical, and it seems very likely that the characteristics of this variety result simply from the heavy weathering of the outside of nodules (perhaps of very different flints). Although GB

is not likely to represent a real flint type, the weathering is so great that no other assignment can be made.

### 34 SPECKLED GRAY (SG)

This sorting variety (Figure C-12) is defined by the presence of minute, jet-black speckles appearing on an otherwise solid, light gray patination (cf. nucleus #5206, scraper #5869, and unretouched flakes #5259 and #5511). Base color is unknown.

### 35 FIBROUS CREAM (FC)

This sorting variety (Figure C-13) is defined by the structure of the flint. The mass of the flint, which patinates to a matte cream or off-white, contains small, rod- or needle-like bodies that do not patinate but rather remain translucent. The unpatinated base color is unknown. The presence of the translucent bodies (which may be small quartz crystals or microfossils) gives the flint the appearance of fiber-tempered pottery (cf. backed tool #707, unretouched chunks #5366 and #6160, and unretouched blade #5714).

### 36 SOLID BLACK (SB)

This sorting variety (Figure C-14) is defined by the unpatinated base color—a solid, slightly brownish (and thus warm) black. Patination is absent (cf. miscellaneous re-touched piece #95 and splintered piece #5216).

### 37 DARK HONEY (DH)

This sorting variety (Figure C-15) is defined by the unpatinated base color—a medium, slightly-reddish brown of warm hue. The color is darker (more dense, more brown) than one of the VW (11) base colors described as honey-colored. All examples are completely unpatinated (cf. nucleus #5212, marginally retouched pieces #44 and #5109, notched flake #5144, denticulate flake #103, truncated piece #6890, unretouched blade #5171, and unretouched flake #5192).

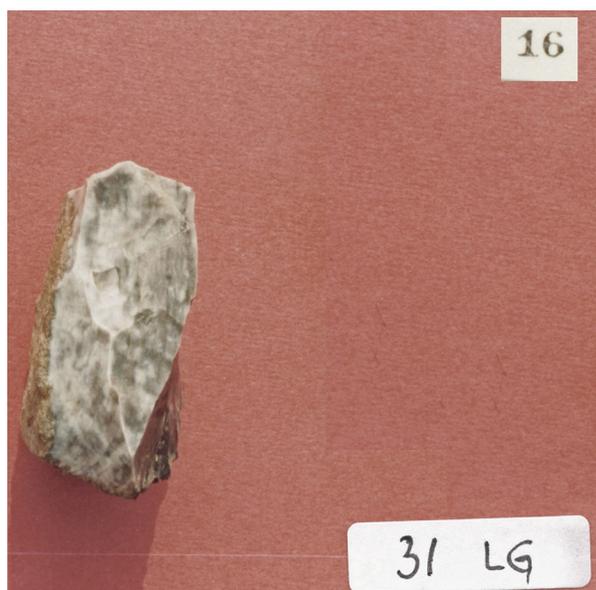


Figure C-9. Flint variety 31 (LG; Laminated Gray).

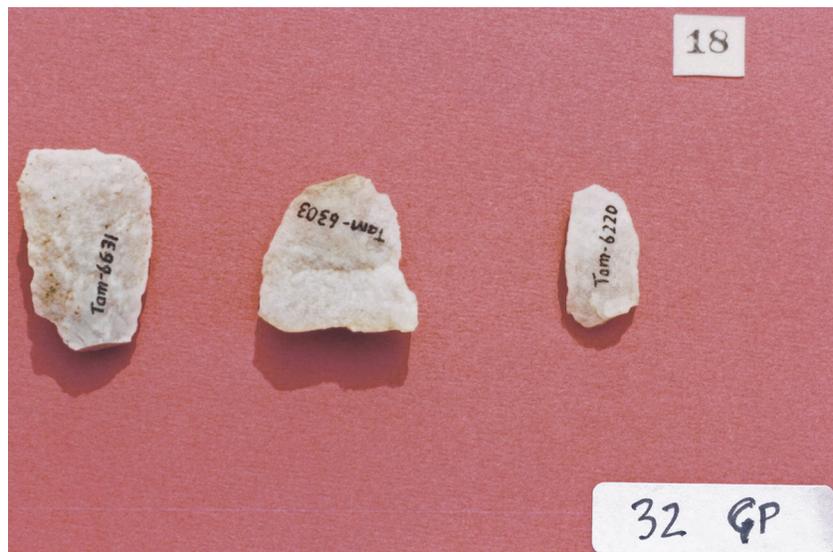


Figure C-10. Flint variety 32 (GP; Grainy Pearl).

### 38 JOINTED CRYSTOCRYSTALLINE (JC)

This sorting variety (Figure C-16) is a cryptocrystalline, non-flint rock called “Lydian stone” (French = *lydienne*) (Simonnet, personal communication, 10 November 1990), probably originating from cobbles in the alluvial load of the Garonne or Volp Rivers (Scandiuuzzi 2008: 22). It breaks by conchoidal fracture, and it is free of impurities except for thin joint lines filled with a rust-brown mineral. The base color is either a semi-lustrous jet black (cf. nucleus #119 and truncated pieces #5908 and #6522) or a dark matte gray (cf. nucleus #227). Cortex does not form on Lydian stone, and patination is virtually absent (Gaillard 1983: 58).

### 41 MISCELLANY (MSY)

This residual category includes unique specimens that cannot be assigned to any of the defined sorting varieties.

### 42 INDETERMINATE—THERMAL ACTION (ITA)

This residual category (Figure C-17) includes pieces that have been so altered by thermal action—either heat or cold—that it is not possible to determine the original characteristics of the flint (cf. unretouched chunks #5236, #5287, and #5315 and unretouched flakes #5288 and #5328).

### 43 INDETERMINATE—CORTEX (IC)

This residual category (Figure C-18) includes pieces that are composed entirely of cortex or are very heavily weathered, such that it is not possible to determine the original characteristics of the flint (cf. unretouched chunks #5290, #5337, and #5338).



Figure C-11. Flint variety 33 (GB; Grainy Brown).



Figure C-12. Flint variety 34 (SG; Speckled Gray).



Figure C-13. Flint variety 35 (FC; Fibrous Cream).



Figure C-14. Flint variety 36 (SB; Solid Black).



Figure C-15. Flint variety 37 (DH; Dark Honey).



Figure C-16. Lithic variety 38 (JC; Jointed Cryptocrystalline).



Figure C-17. Flint variety 42 (ITA; Indeterminate—Thermal Action).



Figure C-18. Flint variety 43 (IC; Indeterminate—Cortex).

## APPENDIX D

FIELD PROSPECTING FOR TAMBOURETS  
FLINT SOURCESTranscript of H. M. Bricker's field notes, June 1977 and  
November 1990

NOTE: In the photographs of flint samples collected, each object or group of objects is represented twice in a left-right pairing that shows both the upper and lower surfaces of each piece.

21 JUNE 1977

## AUSSEING—LOCALITY 1

Directly north of village on SW spur of hill called "le Fa-geal" (top sheet Saint-Gaudens 3-4, XIX-46 3-4).

Paved road ascends through fields and vineyards on lower part of slope, then ends. Jeep trails and paths continue toward summit. I walked up several paths, into clearing shown on map. Bedrock at surface in many places; *calcaire Nankin* is very well exposed. Flint, however, is rare and is found only in small weathered pieces (Figure D-1).

This exact locality would not have been an important

prehistoric flint source.

Figure D-2: Ausseing, Haute-Garonne. Taken from Ausseing Locality 1, looking south. Village of Ausseing, then east flank of hill "La Roche;" Belbèze in distance.

## SAINT-MICHEL—LOCALITY 1

North slope of Mont Saboth; footpath runs from village along flank of north slope. From it another footpath, not on top sheet, ascends to ruined château.

Along the whole path, the soil is usually thick, and vegetation on the slope is heavy. Thus, bedrock is usually not visible. An exception is Locality 1, in the main path—actually a jeep trail here—exactly where the unmarked path angles up to the ruins. Bed of jeep trail is bedrock. Limestone (Ls) in thin beds lying approximately vertically. Sample of reddish brown, rust-colored flint was in situ—I levered it out (Figure D-3). Continuation of this thin tabular plaque is still visible in the road bed.

No flint was seen on trail to château. On top, in the ruins near the geodetic marker, there is a good outcrop of Ls (light brown, granular), but no flint was observed.

Figure D-4: Saint-Michel, Haute-Garonne. View north

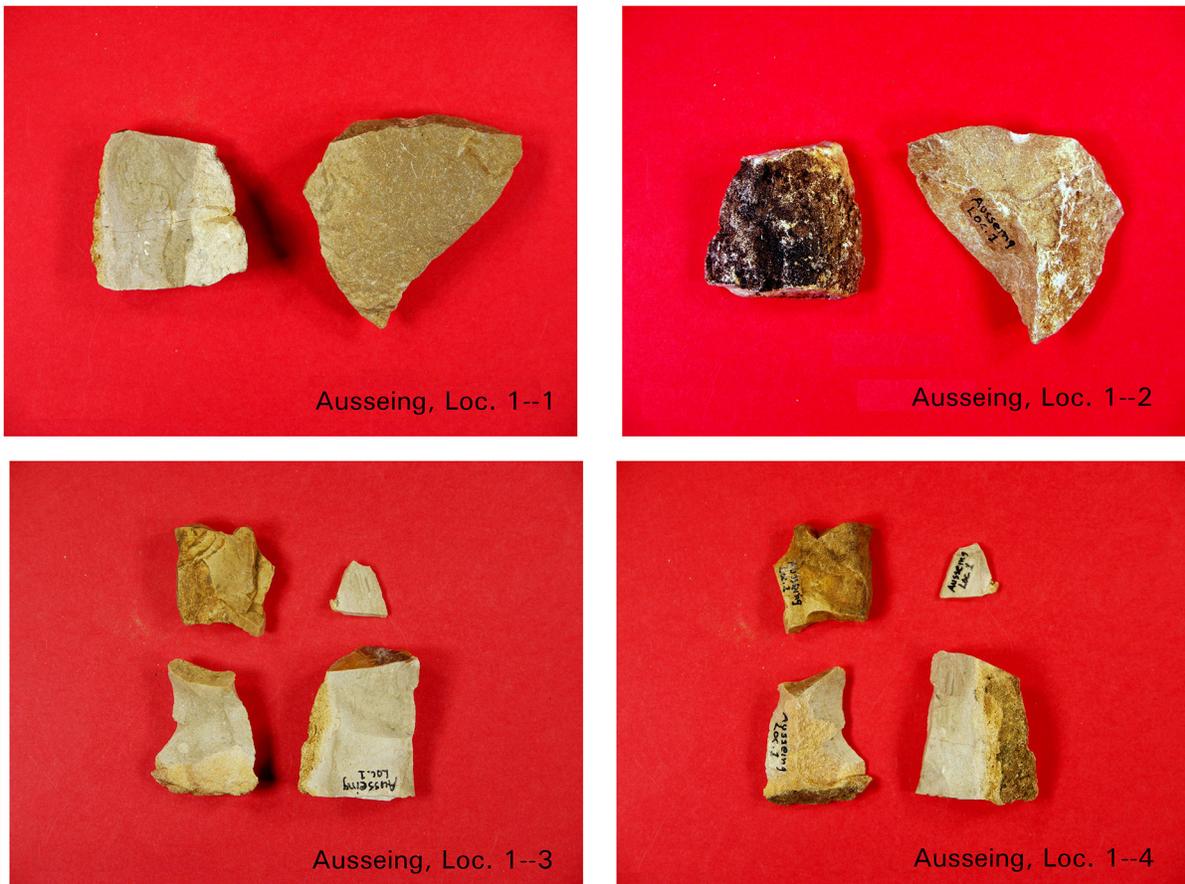


Figure D-1. Flint samples from Ausseing, Locality 1.



Figure D-2. View to north in 1977 from Ausseing, Locality 1.



St.-Michel, Loc. 1--1



St.-Michel, Loc. 1--2

Figure D-3. Flint samples from St.-Michel, Locality 1.



Figure D-4. View to north in 1977 from near St.-Michel, Locality 1.

toward Cazères, Couladère, etc., from top of wall of ruined Château de Saint-Michel.

N.B.: My supposition was correct. Mt. Saboth is known locally as Mont Saint Michel (evidence = a sign to that effect along the footpath to the ruins).

#### LAC DE TOUNIS—LOCALITIES 1 AND 2

Le Ruisseau de Tounis (south bank of Garonne, opposite Palaminy, Haute-Garonne) is dammed to form an artificial lake. Beyond the dam, the brook cuts a steep gorge through the *calcaire sublithographique* and other formations.

Locality 1—Above the dam, east side of lake. Very fractured and checked flint occurs in Ls as isolated nodules and as a thick bed at one spot. Quality is poor here, probably because of exposure. Flint is not abundant in the talus, but of course the stream bed is now under the lake. Sample: several pieces chipped out from the bedrock (Figure D-5); others found on the surface (Figure D-6, upper and middle pairs).

Locality 2—Below dam, east side of gorge. I believe that the samples here are the sublith Ls itself (see Figure D-6, lower pair). Some of the tools or at least ébauches of nuclei at Les Tambourets may be this Ls.

Figure D-7: Lower part of gorge, looking north, from Locality 2.

Figures D-8, D-9, and D-10: Various shots of Locality 1, from west side of lake, looking generally east.

#### 22 JUNE 1977

Accompanied by M.D.

Went first to Paillon; made arrangements to return tomorrow.

Went to Auzas to look for black flint; without success.

#### LA LAVE—LOCALITY 1

Many Ls cobbles in roadcut on west side of road, and flint nodules, plaquettes, and flakes occur mixed in with Ls and topsoil.

Three different varieties of flint were collected (Figure D-11, upper and middle pairs).

Figure D-12: La Lave, northeast of Aurignac, Haute-Garonne. M. D. at one part of Locality 1; looking NW.

#### LA LAVE—LOCALITY 2

Small clearing to west of road, with piles of Ls cobbles (probably cleared from field) along east edge of clearing. Flint very rare. Samples are probably not flint (see Figure D-11, lower pair).

#### MONTSAUNÈS—LOCALITY 1

Quarry, as marked on top sheet. Flint does indeed occur as nodules in bands in quarry face. Some samples pried loose from *in situ* position; others collected from quarry floor (Figure D-13).

#### 23 JUNE 1977

#### LAJOUS

(cf. map Mas d'Azil 1–2) I tried to look for the flint mentioned by Méroc in the alluvial cobbles of the Ruisseau de la Quère. I looked at the stream bed from the bridge on route D.6 just south of Lajous. However, the level of the stream was so high that the cobbles in the bed were not exposed.

I then tried the same thing at the bridge on the small road leading east from route D.7 (to the east of Saint-Michel, just SE of the lieu-dit "l'Aouke"), but the water was again too high.

Just south of this intersection is an old, abandoned quarry. The Ls here seems to be the same as that taken as "Lac Tounis Loc. 2." No flint was seen in the quarry wall or in the debris on the quarry floor.

#### PAILLON—LOCALITY 1

I went back to Paillon (a farm of that name northwest of Saint-Martory, Haute-Garonne) at 3:00 PM as arranged yesterday. Met there with Mme Frossard (Jean Frossard, Paillon, 31360 St-Martory). She showed me her collection of tools and fossils from Paillon. Palaeolithic pieces included:

- Acheulian handaxe on quartzite cobble—large, typical of Garonne gravels but said to be from Paillon
- massive retouched flake of same quartzite
- unifacially retouched point (cf. Mousterian point) of Paillon flint with white porcelain-like patination
- one end-scraper and various other misc. ret. pieces on dark-colored Paillon flint
- polished stone celt (?Neolithic) in ?quartzite

Mme Frossard accompanied me to the cultivated field east of house to collect flint samples. This field = Locality 1.

Flint of several varieties is extremely abundant in this ploughed field (Figures D-14 and D-15). Some of the pieces are nodules or naturally broken chunks, but many are struck flakes and tools. I found several retouched pieces, including a small globular nucleus, that I gave to Mme Frossard.

Samples from Locality 1 represent most of the color varieties seen in Mme Frossard's collection or known by her *except* the white variety. The latter is somewhat glossy or waxy, opaque, very white, like porcelain. The white patination is, however, not solid; rather, it is slightly mottled—the slightly darker mottles are spots where the flint is not quite so opaque.

#### 8 NOVEMBER 1990

The object of the exercise was to examine the beds of the Volp and Quère during the winter "dry" season in order to confirm or disconfirm the Méroc / R. Simonnet position that these streams were major alluvial sources of flint used at Les Tambourets.

Figure D-16: Le Volp, looking upstream, from the

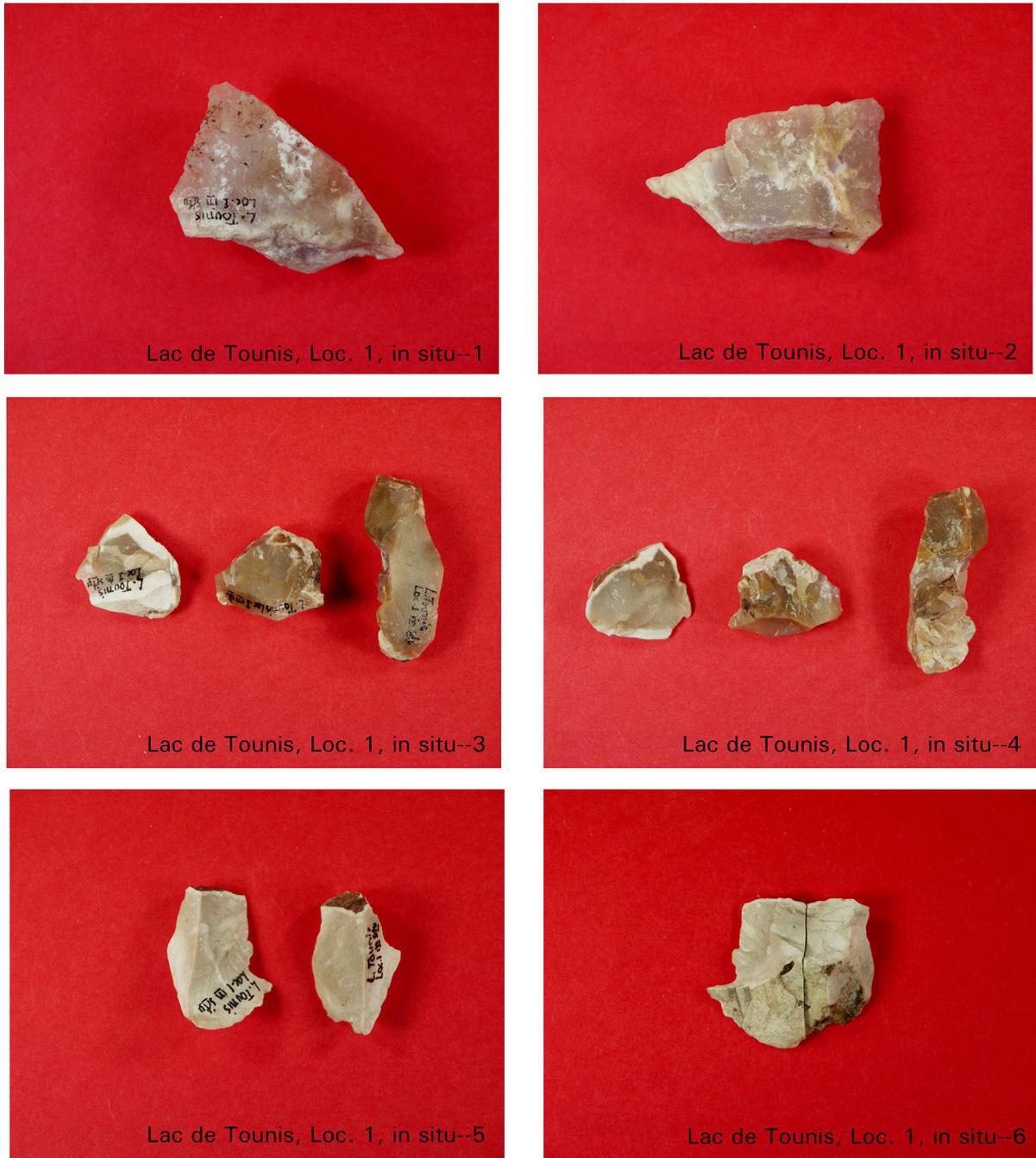


Figure D-5. Flint samples from the Lac de Tounis, Locality 1.

bridge at Le Luquet, Haute-Garonne. The stream is deep and placid *below* this—probably the effect of the dammed-up Garonne. No opportunity to inspect the bottom load here.

Figure D-17: Valley of the Quère below St.-Michel, Haute-Garonne. The load of the stream is *calcaire Nankin*. I found no flint at all.

Figure D-18: Le Volp, in Le Plan, Haute-Garonne, looking downstream. Alluvial load seen on left bank (cobbles, gravels) was examined—no flint found.

Figure D-19: La Quère, looking downstream from the D.6 bridge, south of Couladère, Haute-Garonne. Alluvial load is not visible under deep, placid water.



Figure D-6. Lithic samples from the Lac de Tounis. Upper and middle pairs: flint from Locality 1; lower pair: limestone(?) from Locality 2.

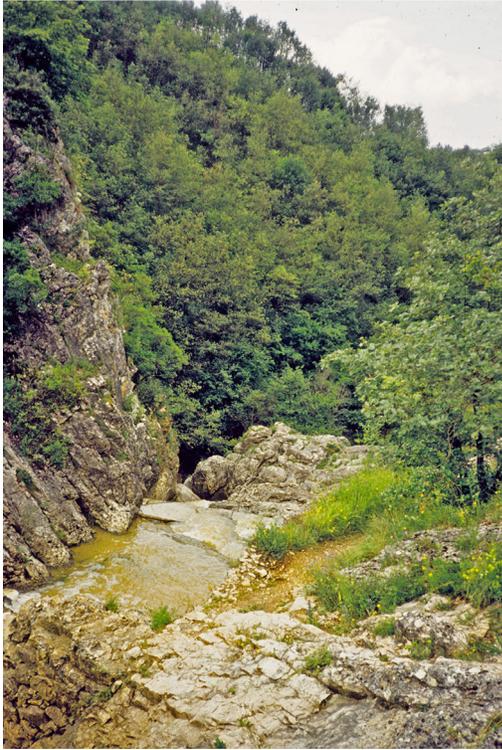


Figure D-7. View to north in 1977 at the Lac de Tounis, Locality 2.

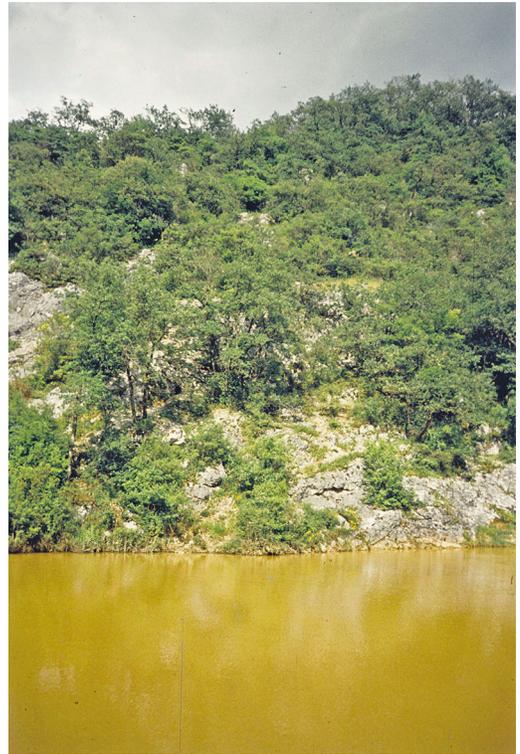


Figure D-8. View to east in 1977 at the Lac de Tounis, Locality 1.



Figure D-9. View to east in 1977 at the Lac de Tounis, Locality 1.



Figure D-10. View to east in 1977 at the Lac de Tounis, Locality 1.



Figure D-11. Lithic samples from La Lave. Upper and middle pairs: flint from Locality 1; lower pair: limestone(?) from Locality 2.



*Figure D-12. View to northwest in 1977 at La Lave, Locality 1.*



Montsaunès, Loc. 1--1



Montsaunès, Loc. 1--2



Montsaunès, Loc. 1--3



Montsaunès, Loc. 1--4



Montsaunès, Loc. 1--5



Montsaunès, Loc. 1--6

Figure D-13. Flint samples from Montsaunès, Locality 1.



Paillon, Loc. 1--1



Paillon, Loc. 1--2



Paillon, Loc. 1--3



Paillon, Loc. 1--4

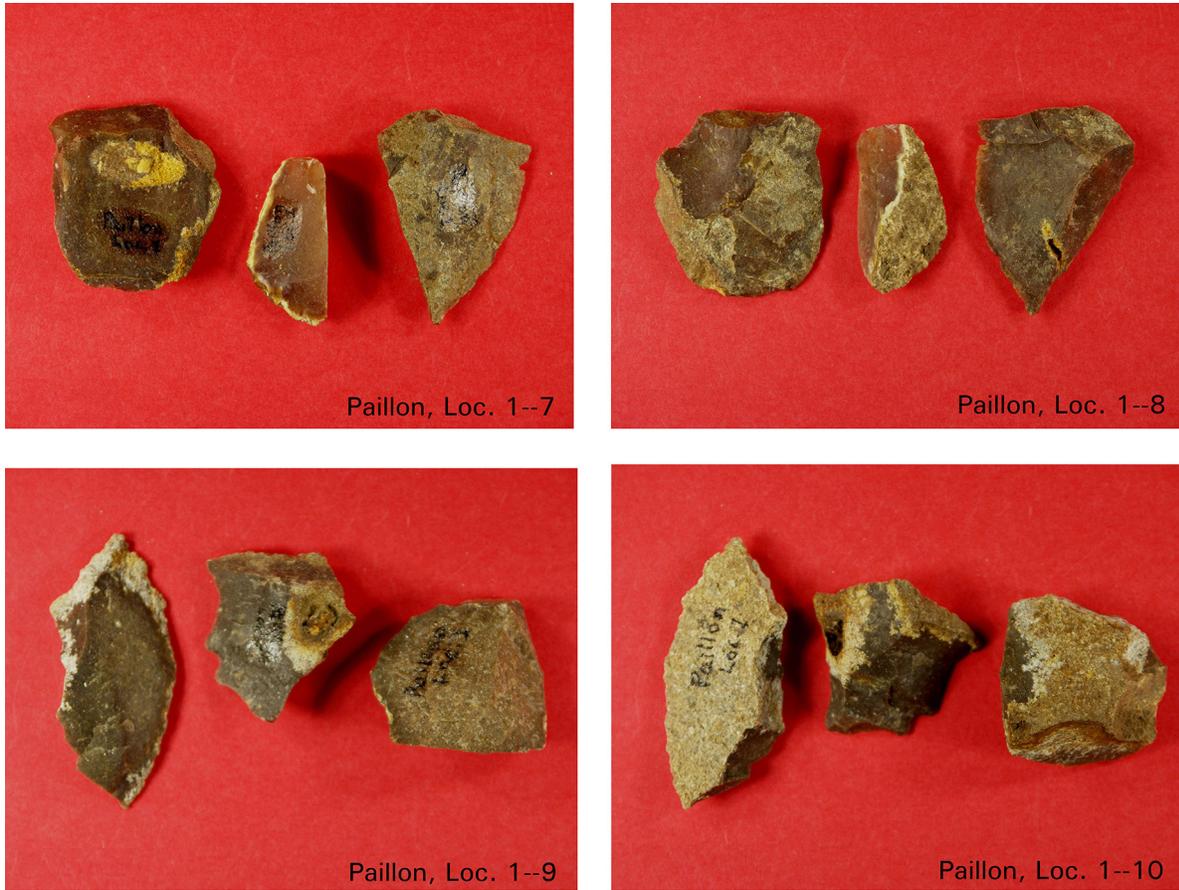


Paillon, Loc. 1--5



Paillon, Loc. 1--6

Figure D-14. Flint samples from Paillon, Locality 1.



*Figure D-15. Flint samples from Paillon, Locality 1.*



*Figure D-16. View looking upstream in 1990 at the valley of the Volp at the Le Luquet bridge.*

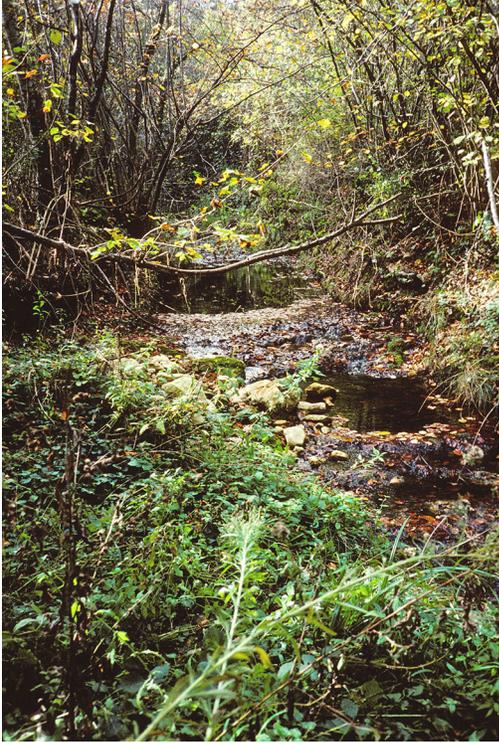


Figure D-17. View looking upstream in 1990 at the valley of the Quère below St.-Michel.



Figure D-18. View looking downstream in 1990 at the valley of the Volp at Le Plan.

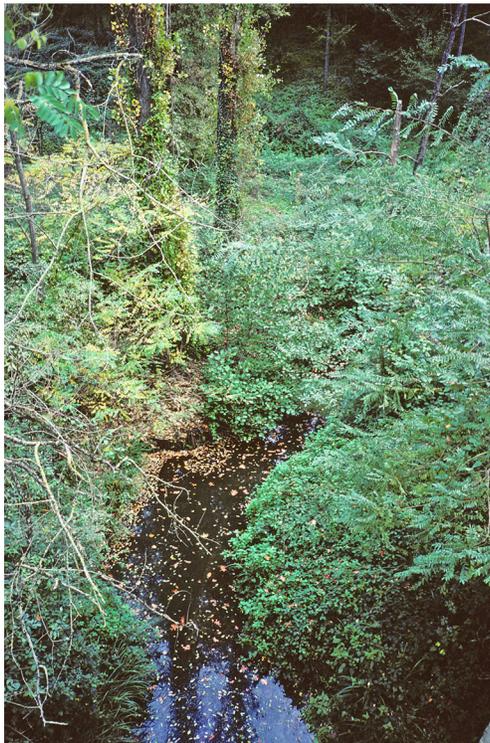


Figure D-19. View looking downstream in 1990 at the valley of the Quère from the highway bridge south of Couladère.

## APPENDIX E

EXCAVATIONS AT LES TAMBOURETS:  
ON-SITE PHOTOGRAPHS

An important part of the documentation of the research project at Les Tambourets is the series of photographs taken at the site during the three seasons of excavation. Almost all of the photos were taken by the co-director of the project (H. Bricker), and this includes all of the formal black-and-white “record” photos. The policy about photography was that all project participants were free to take whatever pictures they wished to, but at the end of the season duplicates of all on-site pictures were given to Bricker to use, with acknowledgement but without further restriction, in lectures and reports.

Photography by Bricker was done with a 35mm single-lens-reflex film camera with two interchangeable backs, one loaded with color film and one with black-and-white. Just over 500 on-site photos were taken and recorded in the photo logs during the three seasons, of which 354 (67% of the total) are included in the digital database in this report (inventoried in Table E-1). Photos *excluded* from the database are: a) duplicates (the same shot taken at different exposures); b) “people” photos that were of interest to the participants but have little to say about excavation techniques or results; and, c) photographic mistakes (out of focus, hopelessly over-exposed or under-exposed, etc.).

Photography at Les Tambourets was done before high-quality digital cameras had come into wide use. The black-and-white film used was either Kodak Plus-X Pan, ASA 125, in 1973 and 1980, or Agfa Isopan ISS, ASA 100, in 1975. Both films were fine for the purpose and gave excellent results. For the color slides, Agfa CT-18, ASA 50, was used in all three seasons, and several rolls of Agfachrome 64, ASA 64, were used in 1980. The use of Agfa slide film rather than a Kodak product was based on the belief that Agfa

did better than Kodachrome with the earth tones important to archaeological photography. However that may be, both these slide films were too slow for optimal results unless the shot was in full sunshine. Therefore, much of the color photography at Les Tambourets was problematic from the start, and problems got worse with further processing and the lapse of time.

Digitization of the Les Tambourets photographic record was started in the mid-1980s using some early and quite unsatisfactory scanning equipment; this job was abandoned. The photographs included in this report’s database were digitized using a Nikon slide and flimstrip scanner. All the black-and-white photos were digitized in December 2009 and January 2010. All of the 1973 color slides and a few of those from 1975 were digitized in February and May 1998, and all the rest (the majority) were done in July 2010.

Several factors contributed to the degradation of quality of the color photos: a) the color of many of the slides was not great to begin with; b) some of the dyes of the color film changed over the decades; c) there was some inevitable color distortion resulting from the scanning; and, d) the slides were in very hot, un-airconditioned space for about two months in 2005 following the forced evacuation of New Orleans (and the absence of electrical power) after Hurricane Katrina. All this means that much adjustment (“Photoshopping”) of the color of the digitized slides was required in order to achieve something approximating the original reality. Viewers of the color photographs must use them with these considerations in mind. For Les Tambourets (as was true generally a century ago), it is the black-and-white images that provide an archaeological record.

An inventory of the on-site photographs is given in Table E-1, and Table E-2 is an index of the major categories of photographs in that inventory.

**Table E-1. Inventory of on-site photographs.**

**Explanation of the format:** The inventory of digital photographs is shown in a four-column format, as follows:

**Column 1:** is the catalogue number of the photograph in the digital database—for example, **a73001**. The letter "a" means that it is a color photo, "73" means that it relates to the 1973 excavation season, and "001" means that it is serial number 1 in that category. Another example is **b750330**. The letter "b" means that it is a black-and-white photo, "75" means that it relates to the 1975 excavation season, and "0330" specifies which negative it is within that category (as explained below for Column 2).

**Column 2:** is the designation of this photograph in the formal site records (photo logs and excavators' notebooks)—for example, **A1973** indicates the first color slide pertaining to the 1973 excavation season. In the other example, **75-3-31**, "75" means that it relates to the 1975 excavation season, "3" means that the photo is on the third black-and-white negative strip from that season, and "31" is one of the two frame numbers placed on the edge of the negative by the film's manufacturer. (Because the film was manufactured to be usable in half-frame cameras, each full-frame negative has two numbers, in this case "30" and "31". For the 1975 black-and-white photos, one of these numbers (here "31") was used in the formal site records while the other (here "30") was sometimes used in the digital catalogue number.)

**Column 3:** is the date on which the photograph was taken—for example, **4 Jan 1973** for a73001 and **3 Jul 1975** for b750330.

**Column 4:** is the caption for the photograph, a specification of what it shows.

#### **Les Tambourets, 1964**

a64001	A1964-3	- Feb 1964	Gensac road-cut section cleaned by Louis Méroc for the visit to Les Tambourets by Hallam L. Movius, Jr., and his students. Châtelperronian archaeological level is just above ferruginous layer at base of ranging pole.
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#### **Les Tambourets, 1973**

a73001	A1973-1	4-Jan-73	The old Gensac road, dividing Area 3, on the left, from Area 2, on the right; looking E.
a73002	A1973-2	4-Jan-73	Entry into Area 3 field from the old Gensac road. Archaeological Level 1 crops out in the road-cut section beyond the auto. Looking NE.
a73004	A1973-4	4-Jan-73	Location of Main Area of the 1973, 1975, and 1980 excavations along the S edge of Area 3; looking E. The barn in the right background, belonging to the Portet family, was used as an on-site lab.
a73005	A1973-5	4-Jan-73	Gensac road-cut section, looking W.
a73006	A1973-6	4-Jan-73	Road cut through Area Ferme along the "new" road; looking SE. Cobble/pebble layer is stratigraphically well below the Châtelperronian archaeological level.

**Les Tambourets, 1973, continued**

a73007	A1973-7	4-Jan-73	Road cut through Area Ferme along "new" road; looking NW with town of Cazères visible in the distance across the Garonne River. The cobble/pebble layer is stratigraphically well below the Châtelperronian archaeological level.
a73008	A1973-8	4-Jan-73	Solifluction band in "new" (D.62) road cut (older than archaeological level).
a73009	A1973-9	1-Jul-73	Main Area of 1973 operations, before excavation, looking SE.
a73011	A1973-11	1-Jul-73	Main Area of 1973 sondage, before excavation, looking SE.
a73013	A1973-13	1-Jul-73	Gensac road-cut section, looking NE. Tip of pole = artifact horizon of Archaeological Level 1. Markers = artifacts.
a73015	A1973-15	1-Jul-73	Gensac road-cut section, looking NE. Tip of pole = artifact horizon of Archaeological Level 1. Markers = artifacts.
a73016	A1973-16	9-Jul-73	V-A(NE) - Archaeological Level 1(0-5 cm), looking N. Markers = artifacts.
a73017	A1973-17	9-Jul-73	V-A(NE--northern edge) - Archaeological Level 1(5-10 cm), with pedestaled artifacts in place; looking N.
a73018	A1973-18	10-Jul-73	V-A(NE--southern part) - Archaeological Level 1(5-10 cm), with pedestaled artifacts in place; looking N.
a73019	A1973-19	11-Jul-73	V-A(NE) - Archaeological Level 1(10-15 cm), with pedestaled artifacts in place; looking N.
a73023	A1973-23	15-Jul-73	V-A(SE) - Archaeological Level 1(5-10 cm), with pedestaled artifacts in place; looking E.
a73024	A1973-24	16-Jul-73	V-A(SE) - Archaeological Level 1(10-15 cm), with pedestaled artifacts in place; to right of string = top of couche C. Looking E.
a73025	A1973-25	18-Jul-73	V-A(W) - Archaeological Level 1. Area between hands was a suspected trace of a structure boundary defined by patterned artifact distributions; suspicion subsequently disconfirmed.
a73027	A1973-27	20-Jul-73	Main Area; general view of 1973 test excavation; looking SW.
a73028	A1973-28	20-Jul-73	Main Area; general view of the 1973 test excavation; looking S.
a73032	A1973-32	20-Jul-73	V-A(W) - Archaeological Level 1(5-10 cm), with pedestaled artifacts in place; looking W.

**Les Tambourets, 1973, continued**

a73033	A1973-33	21-Jul-73	V-A(SW) - Archaeological Level 1(10-15 cm), with pedestaled artifacts in place; looking S.
a73034	A1973-34	23-Jul-73	V-A(NW) - Archaeological Level 1(10-15 cm), with pedestaled artifacts in place; looking W.
a73035	A1973-35	26-Jul-73	V-B(W) - Archaeological Level 1(5-10 cm), with pedestaled artifacts in place; looking W.
a73037	A1973-37	27-Jul-73	V-B. Henri Laville removing samples from the column in the NW corner of the square for sedimentological and palynological analyses; looking NW.
a73038	A1973-38	27-Jul-73	V-B. Excavation and sample removal in progress; looking NE.
a73039	A1973-39	27-Jul-73	V-B. Laville sample column in NW corner of square. Removal of samples for sedimentological and palynological analyses; looking N.
a73041	A1973-41	28-Jul-73	Main Area. Visit of Hallam L. Movius, Jr., to Les Tambourets (with Harvey Bricker); looking E.
a73042	A1973-42	28-Jul-73	V-B(W) - Archaeological Level 1(10-15 cm), with pedestaled artifacts in place; looking W.
a73043	A1973-43	28-Jul-73	V-B(W) - Archaeological Level 1(10-15 cm), with pedestaled artifacts in place. Low-angle partial, looking SW.
a73044	A1973-44	30-Jul-73	V-B(W) - Surface of couche C. Markers = suspected postmolds, subsequently disconfirmed (identified as filled mole tunnels); looking W.
a73045	A1973-45	30-Jul-73	V-B(W) - Surface of couche C. Low-angle partial, looking NW. Markers = suspected postmolds, subsequently disconfirmed.
a73046	A1973-46	30-Jul-73	V-B(W) - Surface of couche C; looking NW. Markers show locations of suspected postmolds, subsequently disconfirmed and demonstrated to be filled animal burrows.
a73047	A1973-47	30-Jul-73	V-B(W) - Surface of couche C. Low-angle partial, looking NW. Markers = suspected postmolds, subsequently disconfirmed.
a73048	A1973-48	30-Jul-73	V-B(W) - couche C; looking N. Suspected postmold, when sectioned, revealed U-shaped filled animal burrow.
a73049	A1973-49	30-Jul-73	V-B(W) - couche C. Section of suspected (and subsequently disconfirmed) postmold No. 1, looking N.

**Les Tambourets, 1973, continued**

a73050	A1973-50	31-Jul-73	V-B(W) - couche C. Section of suspected (and subsequently disconfirmed) postmolds Nos. 3 and 4, looking NW.
a73052	A1973-52	31-Jul-73	V-B(W) - couche C. Flake in filled mole tunnel revealed by excavation of unnumbered cavity to right of suspected postmold No. 2. Looking N.
a73053	A1973-53	31-Jul-73	V-B(W) - Surface of couche C after final scrape. Looking SW.
a73054	A1973-54	31-Jul-73	V-B. Excavation in progress, looking S. (Harvey Bricker)
a73055	A1973-55	31-Jul-73	V-B. Excavation in progress, looking E. (Harvey Bricker)
a73056	A1973-56	31-Jul-73	V-B(E) - Archaeological Level 1(5-10 cm), with pedestaled artifacts in place; looking E.
a73057	A1973-57	2-Aug-73	V-A(N/E) - Laville sample column in NE corner of square; looking E. Markers are at the boundaries of the couches A/B, B/C, and C/D, respectively.
a73058	A1973-58	2-Aug-73	V-A(N/E) - Laville sample column in NE corner of square, looking E. Markers are at the boundaries of couches A and B, couches B and C, and couches C and D, respectively.
a73059	A1973-59	2-Aug-73	V-A(N/E) - Laville sample column in NE corner of square, looking E. Markers are at the boundaries of couches A and B, couches B and C, and couches C and D, respectively.
a73060	A1973-60	2-Aug-73	V-A(N/E) - Laville sample column in NE corner of square, looking E. Markers are at the boundaries of couches A and B, couches B and C, and couches C and D, respectively.
a73062	A1973-62	2-Aug-73	V-B(E) - Archaeological Level 1(10-base), with pedestaled artifacts in place; looking E.
a73063	A1973-63	2-Aug-73	V-B(E) - Archaeological Level 1(10-base), with pedestaled artifacts in place. Low-angle view, looking NE.
a73064	A1973-64	2-Aug-73	V-B(E) - Archaeological Level 1(10-base), with pedestaled artifacts in place. Low-angle view, looking N.
a73066	A1973-66	2-Aug-73	V-B(E) - Archaeological Level 1(10-base). Partial close-up of pedestaled artifacts, vertical view.
a73067	A1973-67	2-Aug-73	V-B(E) - Archaeological Level 1(10-base). Partial close-up of pedestaled artifacts, vertical view.

**Les Tambourets, 1973, continued**

a73068	A1973-68	2-Aug-73	V-B(E) - Archaeological Level 1(10-base). Partial close-up of artifacts, vertical view.
a73069	A1973-69	3-Aug-73	V-B(NW) - Laville sample column in NW corner of square; looking E. Marker at the boundary of couches A and B.
a73070	A1973-70	3-Aug-73	Main Area Last day of excavation (3 August 1973), in the rain.
a73071	A1973-71	5-Aug-73	V-A. Stratigraphy of south wall. Floor = surface of couche C.
a73072	A1973-72	5-Aug-73	V-A. Stratigraphy of south wall. Markers = boundary of couches A and B. Floor = surface of couche C.
a73073	A1973-73	5-Aug-73	V-B(E) - Surface of couche C. Markers = centers of depressions. Looking N.
a73074	A1973-74	5-Aug-73	V-B(E) - Surface of couche C, showing its topographic irregularity; looking N. Markers are in centers of depressions.
a73075	A1973-75	5-Aug-73	V-B(E) - Surface of couche C. Markers = centers of depressions. Low-angle partial. Looking NE.
a73076	A1973-76	8-Aug-73	Main Area. The 1973 sondage (V-A and V-B) after backfilling by M Sentenac; looking S.
a73077	A1973-77	9-Aug-73	Gensac road-cut section after cleaning and drawing, looking NE. Scratched line = top of couche C.
a73078	A1973-78	9-Aug-73	Gensac road-cut section after cleaning and drawing, looking NE. Scratched line = top of couche C.
b730102	73-1-2	20-Jul-73	V-A(W) - Archaeological Level 1(5-10 cm), with pedestaled artifacts in place; looking W.
b730206	73-2-6	21-Jul-73	V-A(SW) - Archaeological Level 1(10-15 cm), with pedestaled artifacts in place; looking S.
b730308	73-3-8	21-Jul-73	V-A(SW) - Archaeological Level 1(10-15 cm), looking S. Close-up of déblitage pile in west-central area of the SW corner of the square. (This pile is shown in its context in photo b730206.)
b730411	73-4-11	28-Jul-73	V-B(W) - Archaeological Level 1(10-15 cm), with pedestaled artifacts in place; looking W.
b730414	73-4-14	28-Jul-73	V-B(W) - Archaeological Level 1(10-15 cm), with pedestaled artifacts in place; looking SW. Low-angle photo.

**Les Tambourets, 1973, continued**

b730517	73-5-17	30-Jul-73	V-B(W) - Surface of couche C, looking W. The surface of couche C is topographically irregular in this area. Markers = suspected postmolds, subsequently disconfirmed (identified as filled mole tunnels).
b730518	73-5-18	30-Jul-73	V-B(W) - Surface of couche C, low-angle shot looking NW. The surface of couche C is topographically irregular in this area. Markers = suspected postmolds, subsequently disconfirmed (identified as filled mole tunnels).
b730620	73-6-20	30-Jul-73	V-B(W) - Surface of couche C, low-angle shot looking NW. The surface of couche C is topographically irregular in this area. Markers = suspected postmolds, subsequently disconfirmed (identified as filled mole tunnels).
b730621	73-6-21	2-Aug-73	V-A. Laville column in NE corner of square, looking E. Above first marker = couche A. Between first and second markers = couche B. Between second and third markers = couche C. Below third marker = couche D.
b730622	73-6-22	2-Aug-73	V-A. Laville column in NE corner of square, looking E. Markers are boundaries of the couches--A/B, B/C, and C/D, respectively.
b730723	73-7-23	2-Aug-73	V-A. Laville column in NE corner of square, looking E. Above first marker = couche A. Between first and second markers = couche B. Between second and third markers = couche C. Below third marker = couche D.
b730724	73-7-24	2-Aug-73	V-A. Laville column in NE corner of square, looking E. Above first marker = couche A. Between first and second markers = couche B. Between second and third markers = couche C. Below third marker = couche D.
b730726	73-7-26	2-Aug-73	V-B(E) - Archaeological Level 1(10-Base), with pedestaled artifacts in place, looking E.
b730828	73-8-28	2-Aug-73	V-B(E) - Archaeological Level 1(10-Base), with pedestaled artifacts in place, looking NE.
b730829	73-8-29	2-Aug-73	V-B(E) - Archaeological Level 1(10-Base), with pedestaled artifacts in place, looking N. Low-angle photo.
b730830	73-8-30	2-Aug-73	V-B(E) - Archaeological Level 1(10-Base), with pedestaled artifacts in place, looking N. Low-angle photo.
b730931	73-9-31	2-Aug-73	V-B(E) - Archaeological Level 1(10-Base). Vertical view (partial) of pedestaled artifacts in place.
b730932	73-9-32	2-Aug-73	V-B(E) - Archaeological Level 1(10-Base). Vertical view (very partial) of pedestaled artifacts in place.

**Les Tambourets, 1973, continued**

b731035	73-10-35	5-Aug-73	V-A. Stratigraphy of south wall, looking S, following completion of excavation. Above markers = couche A; below markers = couche B; floor = couche C.
b731201	73-12-1	4-Jan-73	The old Gensac road, dividing Area 3, on the left, from Area 2, on the right; looking E.
b731202	73-12-2	4-Jan-73	Entry into Area 3 field from old Gensac road. Archaeological Level 1 crops out in the road-cut section beyond the auto. Looking NE.
b731303	73-14-3	4-Jan-73	Main Area of 1973 excavation in Area 3, looking NE.
b731304	73-14-4	4-Jan-73	Main Area of 1973 excavation in Area 3, looking E.
b731305	73-13-5	4-Jan-73	Main Area of 1973 excavation in Area 3, looking E.
b731306	73-13-6	4-Jan-73	View of Tambourets Area 2 and the Portet house from the entrance to the Area 3 field; looking SE.
b731407	73-14-7	4-Jan-73	Looking SE from the entry into the Area 3 field toward the Portet house and Area 2. Line of trees to right of house is on the E edge of the +30 m terrace. Test Pit 2E1, excavated in 1980, was along this line of trees. Trees at bottom of slope on the right are in the valley of the unnamed stream forming the S boundary of Les Tambourets.
b731408	73-14-8	4-Jan-73	Looking S from the entry into the Area 3 field across the old Gensac road and part of Area 2. Trees at bottom of the slope are in the valley of the unnamed stream separating Les Tambourets from Rachat, which is on the slope across the road in the distance.
b731409	73-14-9	4-Jan-73	View to NE across Area 3 toward Area Tambourets-Tersac. Trees in center of photo are on the E edge of the +30 m terrace. To the left of those trees, modern field slopes down to Area T-T. The small Area 4 is beyond the trees, down on the +15 m terrace.
b731410	73-14-10	4-Jan-73	Looking N from entry into field across Area 3 (foreground) and Area Ferme (in distance). New road, not visible, cuts through Area Ferme in front of farm complex (la métairie).
b731511	73-15-11	4-Jan-73	Main Area of the 1973 excavation, looking NW across Tambourets Area 3 and Area Ferme to the old farmhouse (la métairie).
b731512	73-15-12	4-Jan-73	Gensac road-cut section, looking NE.

**Les Tambourets, 1973, continued**

b731513 73-15-13 4-Jan-73 Gensac road-cut section, looking W.

**Les Tambourets, 1975**

a75003 A1975-3 18-Jun-75 V-C - Surface of couche B, looking E. Laville column in SW corner.

a75004 A1975-4 27-Jun-75 View looking W from the Main Area of the 1975 excavations toward Test Pit Alpha, at the start of its excavation.  
Crop in field is soybeans.

a75005 A1975-5 27-Jun-75 View looking W from the Main Area along S edge of Area 3 toward location of Test Pit Alpha, at the start of its excavation.

a75006 A1975-6 27-Jun-75 Test Pit Alpha - Removal of couche A (plough zone) at start of excavation, looking SW.

a75007 A1975-7 27-Jun-75 Test Pit Alpha - Removal of couche A (plough zone) at start of excavation, looking W.

a75008 A1975-8 27-Jun-75 V-D - couche B(5-25 cm). Association of broken cobbles; looking N.

a75009 A1975-9 30-Jun-75 VI-B(W) - Surface of Archaeological Level 1, looking E.

a75011 A1975-11 30-Jun-75 VI-B(W) - Archaeological Level 1(Base), with pedestaled artifacts in place, looking E.

a75012 A1975-12 30-Jun-75 V-C - Surface of Archaeological Level 1, looking N.

a75013 A1975-13 30-Jun-75 V-C - Surface of Archaeological Level 1, looking S.

a75015 A1975-15 2-Jul-75 V-D - Surface of Archaeological Level 1, looking S.

a75016 A1975-16 2-Jul-75 V-D - Surface of Archaeological Level 1, looking N.

a75017 A1975-17 3-Jul-75 V-C(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking S. [Archaeological Level 1 was less than 5 cm. thick in most places in this half-square.]

a75018 A1975-18 7-Jul-75 V-D(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking SW.

## Les Tambourets, 1975, continued

a75019	A1975-19	7-Jul-75	V-D(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking N.
a75021	A1975-21	7-Jul-75	VI-B - Surface of couche C, looking W. [Surface of couche C is present only in western part of square; surface in eastern part of square (foreground) is somewhere within Ditch Fill.]
a75022	A1975-22	7-Jul-75	V-C(W) - Surface of couche C, looking S.
a75023	A1975-23	9-Jul-75	VI-B & VII-B - Bottom of the Ditch. To the left of the Ditch in VI-B is the surface of couche C. To the right of the Ditch in VII-B, excavation in progress has not yet exposed the surface of Archaeological Level 1. Looking NW.
a75024	A1975-24	9-Jul-75	VII-B Surface of couche C (to right) and bottom of ditch (to left), looking N. [Surface east (to right) of the ditch is within the base of couche B, not the surface of couche C.]
a75025	A1975-25	9-Jul-75	VI-B - Surface of couche C (to left) and bottom of ditch (to right), looking NW.
a75027	A1975-27	9-Jul-75	VI-B & VII-B - Surface of couche C (to left and right) and bottom of ditch (center), looking SW. [Surface east (to left) of ditch is within the base of couche B, not the surface of couche C.]
a75028	A1975-28	9-Jul-75	VII-B - Surface of couche C (to left) and bottom of ditch (to right), looking S. [Surface east (to left) of ditch is within the base of couche B, not the surface of couche C.]
a75029	A1975-29	9-Jul-75	VI-B - Surface of couche C (to right) and bottom of ditch (to left), looking SW.
a75030	A1975-30	9-Jul-75	VI-B & VII-B - Surface of couche C (foreground and background) and bottom of ditch (center). [Surface east of ditch (foreground) is within the base of couche B, not the surface of couche C.]
a75031	A1975-31	9-Jul-75	VI-B & VII-B - Surface of couche C (foreground and background) and bottom of ditch (center), looking E. [Surface east of the ditch (background) is within the base of couche B, not the surface of couche C.]
a75032	A1975-32	9-Jul-75	VI-B & VII-B - Southern wall of excavation [showing that the walls of the ditch cannot be seen in section].
a75034	A1975-34	10-Jul-75	V-C(E) - Archaeological Level 1(0-Base), with pedestaled artifacts in place, looking E.
a75035	A1975-35	10-Jul-75	V-C(E) - Archaeological Level 1(0-Base), with pedestaled artifacts in place, looking N.

**Les Tambourets, 1975, continued**

a75036	A1975-36	11-Jul-75	VII-B(E) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking E.
a75039	A1975-39	19-Jul-75	V-C - East wall of square, showing stratigraphy between modern surface and surface of couche C.
a75040	A1975-40	19-Jul-75	Test Pit Beta - Surface of Archaeological Level 1; looking S. Laville column (not sampled) is in the NE corner.
a75041	A1975-41	21-Jul-75	IV-C - Surface of Archaeological Level 1, looking N (baulk left in place on eastern edge of square).
a75042	A1975-42	21-Jul-75	IV-B - Surface of Archaeological Level 1, looking S.
a75043	A1975-43	21-Jul-75	Test Pit Alpha - Exploratory spits dug in Sedimentary Ensembles I and II (excavated as "Below couche B", various levels, from base of 10-15 cm, in lower left corner, to below 30 cm, in lower right corner) in an attempt (ultimately successful!) to determine the slope of the Pleistocene land surface upon which Châtelperronian artifacts accumulated; looking E.
a75044	A1975-44	21-Jul-75	Test Pit Alpha. Exploratory spits dug in Sedimentary Ensembles I and II in an attempt (ultimately successful!) to determine the slope of the Pleistocene land surface upon which Châtelperronian artifacts accumulated; looking S.
a75045	A1975-45	22-Jul-75	V-D(E) - Archaeological Level 1, with pedestaled artifacts in place, looking E.
a75046	A1975-46	22-Jul-75	V-D(E) - Archaeological Level 1, with pedestaled artifacts in place, looking NE.
a75047	A1975-47	22-Jul-75	V-D(E) - Archaeological Level 1, with pedestaled artifacts in place, looking N.
a75048	A1975-48	22-Jul-75	IV-B(W) - Archaeological Level 1, with pedestaled artifacts in place, looking W.
a75054	A1975-54	23-Jul-75	VII-B - Archaeological Level 1, with artifacts in place, and east wall of ditch, looking E. Surface in foreground is bottom and east wall of ditch; surface at base of artifact pedestals is surface of couche C; surface on which slate rests is within the base of couche B.
a75055	A1975-55	23-Jul-75	VII-B - Thickness of Archaeological Level 1 and extreme basal couche B, looking NW. End of tape rests on true surface of couche C.
a75056	A1975-56	25-Jul-75	VI-C - couche B(Basal) and Archaeological Level 1, on left, and Ditch, on right, with pedestaled artifacts in place; looking N. (Excavation had not yet reached the surface of A. L. 1 in the entire area left of the Ditch.)

**Les Tambourets, 1975, continued**

a75057	A1975-57	26-Jul-75	Test Pit Alpha - Small portion of Sedimentary Ensemble II (excavated as "Below couche B(20-25 cm)", with artifacts in place along E wall; looking E.
a75058	A1975-58	28-Jul-75	IV-C(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking N.
a75059	A1975-59	28-Jul-75	VI-C - Archaeological Level 1(0-Base) (left) and ditch (right), with artifacts in place, looking N. Base of pedestals is the true surface of couche C.
a75060	A1975-60	2-Aug-75	IV-B(E) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking E.
a75061	A1975-61	4-Aug-75	IV-C(E) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking E.
a75062	A1975-62	5-Aug-75	Test Pit Alpha Extension 1 and Extension 2. Excavating Sedimentary Ensemble I to different depths to expose the surface of the Châtelperronian archaeological level (S. E. II) on the slope of the Pleistocene land surface as determined in Test Pit Alpha; looking N.
a75063	A1975-63	5-Aug-75	Test Pit Alpha Extension 1 & 2. Excavation of Sedimentary Ensemble I (excavated as the "couche B(0-40 cm wedge"); looking NE.
a75064	A1975-64	5-Aug-75	Test Pit Alpha Extension 1 & 2. Excavation of Sedimentary Ensemble I (excavated as the "couche B(0-40 cm wedge"); looking NE.
a75069	A1975-69	6-Aug-75	V-C. Henri Laville removing samples from sample column in SW corner of square for sedimentological and palynological analyses; looking NW.
a75070	A1975-70	9-Aug-75	V-C - Laville column. Top of sample column (couches A, B, and C); looking NW.
a75071	A1975-71	9-Aug-75	V-C - Laville column. Middle of sample column (couches C and D); looking NW.
a75072	A1975-72	9-Aug-75	V-C - Laville column. Bottom of sample column (couches D through M); looking NW.
a75073	A1975-73	9-Aug-75	V-C - Laville column. Entire sample column (couches A through M); looking NW.

**Les Tambourets, 1975, continued**

a75074	A1975-74	9-Aug-75	V-C - Laville column. Detail of the boundary between couche B and couche C; looking N. Archaeological Level 1 is at the base of couche B.
a75075	A1975-75	9-Aug-75	V-C Laville column. Detail of boundary between base of couche B (at origin of tape) and surface of couche C, looking N.
a75076	A1975-76	9-Aug-75	V-C - Laville column. Detail of concretions in couche G, looking N.
a75077	A1975-77	9-Aug-75	V-C Laville column, top (couches A, B, and C), wetted, looking NW.
a75078	A1975-78	9-Aug-75	V-C Laville column, middle (couches C through J), wetted, looking NW.
a75079	A1975-79	9-Aug-75	V-C Laville column, top (couches A, B, and C), wetted, looking NW.
a75080	A1975-80	9-Aug-75	V-C Laville column. Detail of boundary between couche B and couche C, wetted, looking N.
a75081	A1975-81	9-Aug-75	V-C - Laville column. Detail of couche C after wetting of the section; looking N.
a75083	A1975-83	9-Aug-75	Test Pit Alpha. Laville column in NW corner of square; looking N.
a75092	A1975-92	9-Aug-75	Test Pit Beta. Frost wedge or crack ( <i>fente en coin</i> ) on east wall of square, wetted, looking E.
a75093	A1975-93	9-Aug-75	Test Pit Beta. Frost wedge or crack ( <i>fente en coin</i> ) on east wall of square, wetted, looking E. Detail of top of wedge showing origin in loess.
a75094	A1975-94	9-Aug-75	Test Pit Beta. Frost wedge or crack ( <i>fente en coin</i> ) to left of stadia rod on E wall of square; looking E. The crack, originating in couche B, is 12.5 cm wide at the top. It angles down and to the left through couche C and underlying sediments. The bottom of the crack is ca. 55 cm below the top.
a75095	A1975-95	9-Aug-75	Test Pit Beta. Possible frost crack on the south wall of the Laville column, wetted, looking N. Feature is ca. 7 cm wide at the top, expanding to ca. 10 cm at the base. The bottom is bluntly pointed and ca. 18 cm from the top.
a75096	A1975-96	9-Aug-75	Test Pit Beta. Frost crack on north wall of deep sondage, wetted, looking N. Crack is ca. 15 cm wide at the top. The bottom of the crack, at least 70 cm from the top, is filled with material changed by hydromorphic action.

## Les Tambourets, 1975, continued

a75097	A1975-97	11-Aug-75	VI-B & VI-C - couche C(0-5 cm), with pedestaled artifacts in place, looking SE.
a75119	A1975-119	Jul-75	Main Area. Recording on-site information, looking E. (Arden King, Harvey Bricker) (Marla Hires photo)
a75125	A1975-125	6-Aug-75	V-C Laville column. Henri Laville removing samples, looking NW. (Fred Fowler photo)
a75126	A1975-126	Summer 1975	Main Area. On-site photography. (Fred Fowler photo)
a75130	A1975-130	Jul-75	Test Pit Alpha - Near the base of Sedimentary Ensemble I, excavated as "below couche B". Excavation in progress. (Fred Fowler photo)
a75131	A1975-131	11-Jul-75	VII-B(E) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking E. (Fred Fowler photo)
a75132	A1975-132	11-Jul-75	VII-B(E) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking N. (Fred Fowler photo)
a75133	A1975-133	Summer 1975	Main Area. The Main Area, with Portet's house in background, looking SE. (Fred Fowler photo)
a75134	A1975-134	Aug-75	Main Area. The crew of the 1975 season. Front row: Harvey Bricker, Fred Fowler, Victoria Bricker, Jeanne Trapolin, Marla Hires; middle row: Barbara Holomes, Isabella King, Louise Lepie; back row: Arden King, Joe Cooper, Cliff Samson. (Fred Fowler photo)
a75137	A1975-137	Summer 1975	Excavation tools: brush, picks, and crochets. (Fred Fowler photo)
a75144	- - - -	14-Aug-75	VI-B - Infrared photos of the south wall of the square taken at night by Alexander Marshack in an attempt to recognize the western wall of the Ditch in couche B; looking S. K25: regular color; 29: filter retains only red-infrared; Y12: filter eliminates blue, violet, and ultraviolet.
b750100	75-1-1	27-Jun-75	V-D - couche B(5-25 cm). Association of broken cobbles; looking N.
b750108	75-1-9	30-Jun-75	VI-B(W) - Surface of Archaeological Level 1, looking E.
b750212	75-2-13	30-Jun-75	V-C - Surface of Archaeological Level 1, looking S.

**Les Tambourets, 1975, continued**

b750214	75-2-15	30-Jun-75	V-C - Surface of Archaeological Level 1, looking N.
b750220	75-2-21	2-Jul-75	V-D - Surface of Archaeological Level 1, looking N.
b750322	75-3-23	3-Jul-75	V-C(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking S.
b750324	75-3-25	3-Jul-75	V-C(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking S.
b750326	75-3-27	3-Jul-75	V-C(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place. Vertical view of northern third of half-square.
b750328	75-3-29	3-Jul-75	V-C(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place. Vertical view of middle third of half-square.
b750330	75-3-31	3-Jul-75	V-C(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place. Vertical view of southern third of half-square.
b750332	75-3-33	7-Jul-75	V-D(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking N.
b750434	75-4-35	7-Jul-75	V-D(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking SW.
b750436	75-4-37	7-Jul-75	V-D(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking SW.
b750438	75-4-39	7-Jul-75	V-D(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking SW.
b750500	75-5-1	9-Jul-75	VI-B & VII-B - Surface of couche C and bottom of ditch, looking NW. [Surface east of the ditch, in VII-B, is within the base of couche B, not the surface of couche C.]
b750502	75-5-3	9-Jul-75	VI-B & VII-B - Surface of couche C and bottom of ditch, looking NW. [Surface east of the ditch, in VII-B, is within the base of couche B, not the surface of couche C.]
b750504	75-5-5	9-Jul-75	VII-B - Surface of couche C (to right) and bottom of ditch (to left), looking N. [Surface east (to right) of the ditch, in VII-B, is within the base of couche B, not the surface of couche C.]
b750506	75-5-7	9-Jul-75	VI-B - Surface of couche C (to left) and bottom of ditch (to right), looking NE.

**Les Tambourets, 1975, continued**

b750508	75-5-9	9-Jul-75	VII-B - Surface of couche C and east wall of square, looking E. [Surfaced visible is within the base of couche B, not the surface of couche C.]
b750610	75-6-11	9-Jul-75	VI-B & VII-B - Surface of couche C (to left and right) and bottom of ditch (center), looking SW. [Surface east (to left) of the ditch is within the base of couche B, not the surface of couche C.]
b750612	75-6-13	9-Jul-75	VII-B - Surface of couche C (to left) and bottom of ditch (to right), looking S. [Surface east (to left) of the ditch is within the base of couche B, not the surface of couche C.]
b750614	75-6-15	9-Jul-75	VI-B - Surface of couche C (to right) and bottom of ditch (to left), looking SW.
b750616	75-6-17	9-Jul-75	VI-B & VII-B - Surface of couche C (foreground and background) and bottom of ditch (center), looking W. [Surface east of the ditch (foreground) is within the base of couche B, not the surface of couche C.]
b750618	75-6-19	9-Jul-75	VI-B & VII-B - Surface of couche C (foreground and background) and bottom of ditch (center), looking E. [Surface east of the ditch (background) is within the base of couche B, not the surface of couche C.]
b750620	75-6-21	9-Jul-75	VI-B & VII-B - Southern wall of excavation [showing that the walls of the ditch cannot be seen in section].
b750722	75-7-23	9-Jul-75	VI-B & VII-B - Northern wall of excavation [showing that the walls of the ditch cannot be seen in section].
b750724	75-7-25	10-Jul-75	V-C(E) - Archaeological Level 1(0-Base), with pedestaled artifacts in place, looking N.
b750726	75-7-27	10-Jul-75	V-C(E) - Archaeological Level 1(0-Base), with pedestaled artifacts in place, looking N.
b750728	75-7-29	10-Jul-75	V-C(E) - Archaeological Level 1(0-Base), with pedestaled artifacts in place, looking E.
b750730	75-7-31	10-Jul-75	V-C(E) - Archaeological Level 1(0-Base), with pedestaled artifacts in place, looking E.
b750836	75-8-37	10-Jul-75	Test Pit Beta. Start of excavation by removal of plough zone; looking E. Building visible across Gensac road in Area 2 is Portet's barn, in which the on-site lab was located.
b750902	75-9-2	11-Jul-75	VIII-B(E) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking E.
b750904	75-9-4	11-Jul-75	VII-B(E) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking E.

**Les Tambourets, 1975, continued**

b750908	75-9-8	11-Jul-75	Washed artifacts drying on numbered grid in on-site lab in Portet's barn before numbers are inked.
b750910	75-09-10	11-Jul-75	Inking numbers on artifacts in the on-site lab in Portet's barn.
b751012	75-10-12	11-Jul-75	Entrance to Tambourets Area 3 field and fenced Main Area of 1975 excavations; expedition station wagon.
b751020	75-10-20	11-Jul-75	Emptying backdirt at the dump pile, looking NE.
b751022	75-10-22	11-Jul-75	Test Pit Alpha under excavation, looking W.
b751134	75-11-34	12-Jul-75	VII-B(E) - Archaeological Level 1(0-Base), with pedestaled artifacts in place, looking E.
b751236	75-12-36	12-Jul-75	VII-B(E) - Archaeological Level 1(0-Base), with pedestaled artifacts in place, looking E. [Surface in the near foreground is the bottom of the ditch; the surface between it and the excavated half-square is within the base of couche B.]
b751238	75-12-38	12-Jul-75	VII-B(E) - Archaeological Level 1(0-Base), with pedestaled artifacts in place, looking S. [The real surface of couche C, at the origin of the vertical tape, is very clearly below the surface on which the excavator is squatting, which was mistakenly thought to be couche C in the photos of 9 Jul 1975.]
b751240	75-12-40	12-Jul-75	VII-B(E) - Archaeological Level 1(0-Base), with pedestaled artifacts in place, looking W. [The real surface of couche C, at the origin of the vertical tape, is very clearly below the surface on which the excavator is squatting, which was mistakenly thought to be couche C in the photos of 9 Jul 1975.]
b751302	75-13-3	19-Jul-75	The crew of the 1975 season. Foreground: Jeanne Trapolini; middle row: Harvey Bricker, Victoria Bricker, Barbara Holmes, Fred Fowler, Isabella King, Louis Lepie, Cliff Samson, Marla Hires; back row: Arden King, Joe Cooper.
b751304	75-13-5	21-Jul-75	IV-C - Surface of Archaeological Level 1, looking N (baulk left in place on eastern edge of square).
b751308	75-13-9	21-Jul-75	IV-B - Surface of Archaeological Level 1, looking S.
b751412	75-14-13	22-Jul-75	V-D(E) - Archaeological Level 1, with pedestaled artifacts in place, looking E.
b751414	75-14-15	22-Jul-75	V-D(E) - Archaeological Level 1, with pedestaled artifacts in place, looking E.

**Les Tambourets, 1975, continued**

b751416	75-14-17	22-Jul-75	V-D(E) - Archaeological Level 1, with pedestaled artifacts in place, vertical view of northern quarter of half-square.
b751418	75-14-19	22-Jul-75	V-D(E) - Archaeological Level 1, with pedestaled artifacts in place, vertical view of next-to-northern quarter of half-square.
b751420	75-14-21	22-Jul-75	V-D(E) - Archaeological Level 1, with pedestaled artifacts in place, vertical view of next-to-southern quarter of half-square.
b751522	75-15-23	22-Jul-75	V-D(E) - Archaeological Level 1, with pedestaled artifacts in place, vertical view of southern quarter of half-square.
b751524	75-15-25	22-Jul-75	Main Area. Visit of Hallam L. Movius, Jr., to Les Tambourets (with Nancy Movius, Arden King); looking N.
b751528	75-15-29	22-Jul-75	IV-B(W) - Archaeological Level 1, with pedestaled artifacts in place, looking W.
b751530	75-15-31	25-Jul-75	VI-C - couche B(Basal) and Archaeological Level 1, on left, and Ditch, on right, with pedestaled artifacts in place; looking N. [Surface to left of ditch is within the base of couche B near the surface of Archaeological Level 1. It is not the surface of couche C.]
b751532	75-15-33	25-Jul-75	VI-C - Archaeological Level 1 (left) and ditch (right), with pedestaled artifacts in place, looking N. [Surface to left of ditch is within the base of couche B near the surface of Archaeological Level 1. It is not the surface of couche C.]
b751634	75-16-35	25-Jul-75	VI-C - Archaeological Level 1 (left) and ditch (right), with pedestaled artifacts in place, looking NW. [Surface to left of ditch is within the base of couche B near the surface of Archaeological Level 1. It is not the surface of couche C.]
b751638	75-16-39	25-Jul-75	Excavation in progress.
b751706	75-17-7	26-Jul-75	Test Pit Alpha - Sedimentary Ensemble II (excavated as "Below couche B(20-25 cm)", with artifacts in situ along E wall; tape gives true N-S measurement. Looking E.
b751810	75-18-11	28-Jul-75	IV-C(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking N

**Les Tambourets, 1975, continued**

b751812	75-18-13	28-Jul-75	IV-C(W) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking N
b751814	75-18-15	28-Jul-75	Victoria Bricker in the on-site lab in Portet's barn.
b751922	75-19-23	28-Jul-75	Main Area. Isabella King recording artifact coordinates being read to her by excavator in an adjacent square.
b751930	75-19-31	28-Jul-75	Excavation in progress in Test Pit Alpha, looking SW.
b752036	75-20-37	28-Jul-75	Excavating in Test Pit Alpha.
b752100	75-21-1	29-Jul-75	Wetting down the bottom of the Ditch in VI-B and VI-C for photography, looking NE.
b752104	75-21-5	31-Jul-75	VI-C - Surface of couche C, to left, and bottom of Ditch, to right; looking N. West wall of Ditch not detectable in couche B in section of north wall of square.
b752106	75-21-7	31-Jul-75	VI-B, VI-C, VII-B Bottom of Ditch, extending into couche C; looking NE.
b752108	75-21-9	31-Jul-75	VI-B, VI-C, & VII-B - Bottom of Ditch, moistened for visual contrast with sediment of couche C, into which it extends; looking NE.
b752210	75-22-11	31-Jul-75	VI-B, VI-C, VII-B Bottom of Ditch moistened for contrast with sediment of couche C, into which it extends. Photo taken from ladder, looking N.
b752212	75-22-13	31-Jul-75	VI-B, VI-C, VII-B Bottom of Ditch moistened for contrast with sediment of couche C, into which it extends. Photo taken from ladder, looking SE.
b752216	75-22-17	31-Jul-75	VI-B, VI-C, & VII-B - Bottom of Ditch, moistened for visual contrast with sediment of couche C, into which it extends; looking SE.
b752218	75-22-19	31-Jul-75	VI-B, VI-C, VII-B Bottom of Ditch moistened for contrast with sediment of couche C, into which it extends; looking NE.
b752220	75-22-21	31-Jul-75	VI-B, VI-C, VII-B Bottom of Ditch moistened for contrast with sediment of couche C, into which it extends; looking E.

**Les Tambourets, 1975, continued**

b752322	75-23-23	31-Jul-75	VI-B, VII-B	Bottom of Ditch moistened for contrast with sediment of couche C, into which it extends; looking SE.
b752324	75-23-25	2-Aug-75	IV-B(E)	- Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking E.
b752326	75-23-27	2-Aug-75	IV-B(E)	- Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking E.
b752328	75-23-29	2-Aug-75	IV-B(E)	- Archaeological Level 1(0-5 cm), with pedestaled artifacts in place. Vertical photo of northern quarter.
b752330	75-23-31	2-Aug-75	IV-B(E)	- Archaeological Level 1(0-5 cm), with pedestaled artifacts in place. Vertical photo of second quarter from the north.
b752332	75-23-33	2-Aug-75	IV-B(E)	- Archaeological Level 1(0-5 cm), with pedestaled artifacts in place. Vertical photo of third quarter from the north.
b752434	75-24-35	2-Aug-75	IV-B(E)	- Archaeological Level 1(0-5 cm), with pedestaled artifacts in place. Vertical photo of southern quarter.
b752501	75-25-56	4-Aug-75	Main Area.	Jean Clottes on a <i>visite de contrôle</i> to Les Tambourets (with Harvey Bricker); looking NE.
b752502	75-25-2	4-Aug-75	IV-C(E)	- Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking E.
b752504	75-25-4	4-Aug-75	IV-C(E)	- Archaeological Level 1(0-5 cm), with pedestaled artifacts in place, looking E.
b752506	75-25-6	7-Aug-75	Test Pit Alpha.	- Laville sample column in NW corner of test pit. Henri Laville taking samples for sedimentological and palynological analyses; looking N.
b752610	75-26-10	7-Aug-75	Test Pit Alpha.	- Laville sample column in NW corner of test pit. Henri Laville taking samples for sedimentological and palynological analyses; looking NW.
b752612	75-26-12	7-Aug-75	Test Pit Alpha.	Henri Laville taking samples from NW corner of test pit for sedimentological and palynological analyses.
b752614	75-26-14	7-Aug-75	Test Pit Alpha.	Henri Laville taking samples from NW corner of test pit for sedimentological and palynological analyses.
b752616	75-26-16	9-Aug-75	V-C	- Laville column. Top of sample column (couches A, B, and C); looking NW.

**Les Tambourets, 1975, continued**

b752618	75-26-18	9-Aug-75	V-C - Laville column. Middle and bottom of sample column (couches C through M); looking NW.
b752620	75-26-20	9-Aug-75	V-C - Laville column. Bottom of sample column (couches D through M); looking NW.
b752722	75-27-22	9-Aug-75	V-C - Laville sample column. Series of close-up photos of sediments, from top of column to bottom. Tape at right edge of photos locates boundaries between couches, as specified below (note, however, that the measurements on the tape are not the elevations below site zero that define the boundaries of Laville's samples): B/C 157cm C/D 117cm D/E 57cm E/F 54cm F/G 46cm G/H 32cm H/I 20cm I/J 10cm J/K 5cm K/L 0cm L/M 1cm below end of tape Photo 1: couche A (plough zone)
b752724	75-27-24	9-Aug-75	V-C - Laville column. Detail of upper part of couche B and base of couche A (the plough zone); looking N. (The tape shows relative scale only, not the depth below site zero.)
b752726	75-27-26	9-Aug-75	V-C - Laville column. Detail of middle part of couche B; looking N. (The tape shows relative scale only, not the depth below site zero.)
b752728	75-27-28	9-Aug-75	V-C - Laville column. Detail of boundary between couche B and couche C; looking N. Archaeological Level 1 is at the base of couche B. (The tape shows relative scale only, not the depth below site zero.)
b752730	75-27-30	9-Aug-75	V-C - Laville column. Detail of upper and middle parts of couche C; looking N. (The tape shows relative scale only, not the depth below site zero.)
b752732	75-27-32	9-Aug-75	V-C - Laville column. Detail of lower part of couche C and upper part of couche D; looking N. Marker is at C/D boundary. (The tape shows relative scale only, not the depth below site zero.)

**Les Tambourets, 1975, continued**

b752834	75-28-34	9-Aug-75	V-C - Laville column. Detail of upper-middle part of couche D; looking N. (The tape shows relative scale only, not the depth below site zero.)
b752836	75-28-36	9-Aug-75	V-C - Laville column. Detail of lower-middle part of couche D; looking N. (The tape shows relative scale only, not the depth below site zero.)
b752838	75-28-38	9-Aug-75	V-C - Laville column. Detail of base of couche D, couches E and F, and upper part of couche G; looking N. (The tape shows relative scale only, not the depth below site zero.)
b752900	75-29-1	9-Aug-75	V-C - Laville column. Detail of lower part of couche G and upper part of couche H; looking N. OUT OF FOCUS
b752902	75-29-3	9-Aug-75	V-C - Laville column. Detail of base of couche H, couches I and J, and upper part of couche K; looking N (The tape shows relative scale only, not the depth below site zero.)
b752904	75-29-5	9-Aug-75	V-C - Laville column. Detail of base of couche H to top of couche M; looking N. (The tape shows relative scale only, not the depth below site zero.)
b752906	75-29-7	9-Aug-75	Test Pit Alpha - Laville sample column in NW corner of square; looking N.
b753010	75-30-11	9-Aug-75	Test Pit Alpha - Laville sample column. Top of column (couche A and top of Sedimentary Ensemble I); looking N.
b753012	75-30-13	9-Aug-75	Test Pit Alpha - Laville sample column. Middle portion of column (Sedimentary Ensemble I [bottom], S. E. II, and S. E. III); looking N.
b753014	75-30-15	9-Aug-75	Test Pit Alpha - Laville sample column. Bottom of column (Sedimentary Ensemble II [bottom], S. E. III, S. E. IV, and S. E. V [top]); looking N.
b753016	75-30-17	9-Aug-75	Test Pit Alpha - Laville sample column. Series of close-up photos of sediments, from top of column to bottom. Photo 1: couche A (plough zone).
b753018	75-30-19	9-Aug-75	Test Pit Alpha - Laville sample column. Series of close-up photos of sediments, from top of column to bottom. Photo 2: Base of couche A and top of Sedimentary Ensemble I.
b753020	75-30-21	9-Aug-75	Test Pit Alpha - Laville sample column. Series of close-up photos of sediments, from top of column to bottom. Photo 3: Within Sedimentary Ensemble I.

**Les Tambourets, 1975, continued**

b753122	75-31-23	9-Aug-75	Test Pit Alpha - Laville sample column. Series of close-up photos of sediments, from top of column to bottom. Photo 4: Within Sedimentary Ensemble I.
b753124	75-31-25	9-Aug-75	Test Pit Alpha - Laville sample column. Series of close-up photos of sediments, from top of column to bottom. Photo 5: Base of Sedimentary Ensemble I and Sedimentary Ensemble II.
b753126	75-31-27	9-Aug-75	Test Pit Alpha - Laville sample column. Detail of Sedimentary Ensembles II, III, and top of IV; looking N. Shallow gully eroded into surface of S. E. IV is filled with lighter colored S. E. III sediment. (Photo 6 of series)
b753128	75-31-29	9-Aug-75	Test Pit Alpha - Laville sample column. Detail of Sedimentary Ensembles III and IV and top of V. Shallow gully eroded into surface of S. E. IV is filled with lighter colored S. E. III sediment. (Photo 7 of series)
b753130	75-31-31	9-Aug-75	Test Pit Alpha - Laville sample column. Series of close-up photos of sediments, from top of column to bottom. Photo 8: Sedimentary Ensemble IV and top of Sedimentary Ensemble V.
b753132	75-31-33	9-Aug-75	Test Pit Alpha - Laville sample column. Series of close-up photos of sediments, from top of column to bottom. Photo 9: Base of Sedimentary Ensemble IV and top of Sedimentary Ensemble V.
b753234	75-32-35	9-Aug-75	Test Pit Alpha - Laville sample column. Series of close-up photos of sediments, from top of column to bottom. Photo 10: Within Sedimentary Ensemble V (base of sample column; bottom of Sedimentary Ensemble V not reached).
b753238	75-32-39	9-Aug-75	Test Pit Alpha - Laville sample column in NW corner of square; looking N.
b753300	75-33-55	11-Aug-75	VI-B and VI-C - couche C(0-5 cm), with pedestaled artifacts in place, looking SE.
b753302	75-33-3	11-Aug-75	VI-B and VI-C - couche C(0-5 cm), with pedestaled artifacts in place; photo from ladder, looking N.
b753306	75-33-7	11-Aug-75	VI-B - couche C(0-5 cm), with pedestaled artifacts in place, showing that they occur at the top of the 5-cm spit; looking E.
b753410	75-34-11	11-Aug-75	General view of Trenches IV, V, and VI, Squares B and C, showing context of Laville sample column in V-C.
b753708	75-37-9	18-Aug-75	V-C - Archaeological Level 1. Excavation of the remnant of the Laville sample column; numbering of artifacts in situ before measuring their coordinates.

**Les Tambourets, 1975, continued**

b753816	75-38-17	18-Aug-75	M & Mime Ponsaty, in center of photo, and their family and employees, from the Hôtel Cochon de Lait in Cazères, hosting a surprise on-site champagne party for the crew at Les Tambourets.
b753928	75-39-29	21-Aug-75	Main Area, back-filled.
b754034	75-40-35	21-Aug-75	Main Area, back-filled.
b754036	75-40-37	21-Aug-75	North face of the Gensac road-cut section, showing the continuation of the Ditch encountered in Trenches VI and VII of the Main Area; looking N.
b754038	75-40-39	21-Aug-75	North face of the Gensac road-cut section, showing the continuation of the Ditch encountered in Trenches VI and VII of the Main Area; looking N.

**Les Tambourets, 1980**

a80034	A1980-34	4-Jul-80	Main Area. Excavation of couche B in III-A and III-B, looking W.
a80035	A1980-35	4-Jul-80	Main Area. Excavation of couche B in III-A and III-B, looking SW.
a80036	A1980-36	4-Jul-80	Test Pits 3W1 and 3W3. Looking W along line between Squares B and C (clearing in wheat). TP3W1 (staked) in foreground; TP3W3 under excavation farther west.
a80037	A1980-37	9-Jul-80	Test Pit 3W3, under shelter, as viewed from Main Area; looking W.
a80039	A1980-39	12-Jul-80	II-B(S) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place in southern 50 cm, looking S.
a80042	A1980-42	12-Jul-80	II-B(S) - Archaeological Level 1. Excavation in progress, looking SW.
a80044	A1980-44	17-Jul-80	Main Area. Using the Wye level and range pole to determine the depth of artifacts; looking SE.
a80045	A1980-45	18-Jul-80	Test Pit 3W1. Excavation of couche B in progress, looking NW.
a80046	A1980-46	18-Jul-80	III-A. Excavation of couche B in progress, looking S. (Arden King, Isabella King)
a80047	A1980-47	18-Jul-80	Test Pit 3W1. Using the Wye level to record depths of artifacts in TP3W1, looking N.

**Les Tambourets, 1980, continued**

a80049	A1980-49	18-Jul-80	<p>Test Pit 3W3. Stratigraphic block showing that Archaeological Level 1 rests directly upon couche C; looking E. Low face is a cut through A. L. 1. Surface at base of low cut is surface of couche C, with A. L. 1 artifacts pedestaled in place. Vertical face in foreground is a cut through couche C(0-5 cm), with the horizontal tape at the base of this cut.</p>
a80052	A1980-52	21-Jul-80	<p>Test Pit 2E1. - Stratum III surface; looking S. Knife in section wall marks surface of Stratum II; tape and slate rest on surface of Stratum III.</p>
a80053	A1980-53	21-Jul-80	<p>III-A(W) - Archaeological Level 1, with pedestaled artifacts in place, looking W. (Only the southern 165 cm has been excavated; the northern extremity of the half-square is under the plank.)</p>
a80056	A1980-56	23-Jul-80	<p>III-A(E) - Archaeological Level 1, with pedestaled artifacts in place, looking E. (Only the southern 165 cm has been excavated; the northern extremity of the half-square is under the plank.)</p>
a80058	A1980-58	24-Jul-80	<p>Test Pit 3W1. Stratigraphic block showing that Archaeological Level 1 rests directly upon couche C; looking W. Small surface at left is the surface of A. L. 1. The larger surface below it is the surface of couche C, with pedestaled A. L. 1 artifacts upon it. The tape rests on an arbitrary surface within couche C.</p>
a80060	A1980-60	24-Jul-80	<p>Test Pit 3W1. Stratigraphic block (close-up detail) showing that Archaeological Level 1 rests directly upon couche C, looking W. Small surface at left is the surface of Archaeological Level 1. The larger surface below it is the surface of couche C, with pedestaled Archaeological Level 1 artifacts upon it. The tape rests on an arbitrary surface within couche C.</p>
a80061	A1980-61	24-Jul-80	<p>Test Pit 3W1. Stratigraphic block (close-up detail) showing that Archaeological Level 1 rests directly upon couche C; looking W. Small surface at left is the surface of A. L. 1. The larger surface below it is the surface of couche C, with pedestaled A. L. 1 artifacts upon it. The tape rests on an arbitrary surface within couche C.</p>
a80066	A1980-66	24-Jul-80	<p>Main Area. Owners of this part of Les Tambourets (Area 3), M et Mme Yvon Dubois, with Victoria and Harvey Bricker.</p>
a80067	A1980-67	29-Jul-80	<p>Test Pit 3W5. Using the Wye level to record depths of artifacts in couche B(40-50 cm), looking E.</p>
a80068	A1980-68	29-Jul-80	<p>Test Pit 3W5. Using the Wye level to record depths of artifacts in couche B(40-50 cm), looking N.</p>
a80070	A1980-70	30-Jul-80	<p>IV-A(NW) - Harvey Bricker excavating Archaeological Level 1; looking NE. (Victoria Bricker photo)</p>

**Les Tambourets, 1980, continued**

a80071	A1980-71	30-Jul-80	IV-A(NW) - Archaeological Level 1, with pedestaled artifacts in place; looking NE.
a80074	A1980-74	31-Jul-80	IV-A(NW) - Archaeological Level 1, with pedestaled artifacts in place; looking E.
a80075	A1980-75	2-Aug-80	II-A(NE) and II-B(SE) - Archaeological Level 1, with pedestaled artifacts in place; looking W.
a80077	A1980-77	3-Aug-80	Test Pit 3W5. Stratigraphic block showing that the main concentration of artifacts in Archaeological Level 1 is several cm above the surface of couche C; looking W.
a80080	A1980-80	6-Aug-80	Main Area. Excavated areas in the Main Area, TP3W1, TP3W3, and TP3W5 ready for backfilling, looking W.
a80083	A1980-83	7-Aug-80	Test Pit 2E1, showing different bases of excavation just before backfilling; looking S.
a80084	A1980-84	7-Aug-80	Test Pit 2E1. General view, looking NW, of the eastern part of Area 2, Pierre Portet's house and barn, and vineyard, from a point near TP2E1.
a80085	A1980-85	7-Aug-80	Main Area. General view, looking SE, of the area of the 1980 excavations (Main Area, TP3W1, TP3W3, and TP3W5) after having been backfilled.
b800102	80-1-2	2-Jul-80	III-A and III-B(S) - couche B(0-5 cm). Excavation in progress, looking SE.
b800103	80-1-3	4-Jul-80	Main Area. Excavation of couche B in III-A and III-B, looking W.
b800204	80-2-4	4-Jul-80	Main Area. Excavation of couche B in III-A and III-B, looking SW.
b800205	80-2-5	4-Jul-80	Test Pit 3W1. Looking W along line between Squares B and C (clearing in wheat). TP3W1 (staked) in foreground; TP3W3 under excavation further west.
b800208	80-2-8	12-Jul-80	III-B(S) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place in western portion of southern 50 cm; photo from ladder, looking N.
b800209	80-2-9	12-Jul-80	III-B(S) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place in eastern portion of southern 50 cm; photo from ladder, looking N.
b800310	80-3-10	12-Jul-80	III-B(S) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place; photo from ladder, looking N.

**Les Tambourets, 1980, continued**

b800312	80-3-12	12-Jul-80	III-B(S) - Harvey Bricker excavating Archaeological Level 1; looking SW.
b800314	80-3-14	17-Jul-80	Main Area. Arden King using the Wye level; looking NW.
b800416	80-4-16	18-Jul-80	Test Pit 3W1. Excavation of couche B in progress, looking NW.
b800418	80-4-18	18-Jul-80	III-A. Excavation of couche B. (Arden King, Isabella King)
b800502	80-5-2	18-Jul-80	Test Pit 3W3. Stratigraphic block showing that Archaeological Level 1 rests directly upon couche C, looking E. Vertical tape originates on surface of Archaeological Level 1. Low face is a cut through Archaeological Level 1. Surface at base of low cut is surface of couche C, with Archaeological Level 1 artifacts pedestaled in place. Vertical face in foreground is a cut through couche C(0-5 cm), with the horizontal tape at the base of this cut.
b800605	80-6-5	18-Jul-80	Test Pit 3W3. Stratigraphic block (close-up detail) showing that Archaeological Level 1 rests directly upon couche C; looking E. Low face is a cut through A. L. 1. Surface at base of low cut is surface of couche C, with A. L. 1 artifacts pedestaled in place. Vertical face in foreground is a cut through couche C(0-5 cm), with the horizontal tape at the base of this cut.
b800606	80-6-6	18-Jul-80	Test Pit 3W3. Harvey Bricker making an entry in the photo log during the excavation of the test pit. (Victoria Bricker photo)
b800608	80-6-8	21-Jul-80	Test Pit 2E1 - Stratum III surface, looking S. Knife in section wall marks surface of Stratum II; tape and slate rest on surface of Stratum III.
b800710	80-7-10	21-Jul-80	III-A(W) - Archaeological Level 1, with pedestaled artifacts in place, looking W. (Only the southern 165 cm has been excavated; the northern extremity of the half-square is under the plank.)
b800712	80-7-12	21-Jul-80	III-A(W) - Archaeological Level 1, with pedestaled artifacts in place, vertical view; plank at left is toward N. (Only the southern 165 cm has been excavated; the northern extremity of the half-square is under the plank.)
b800713	80-7-13	23-Jul-80	III-A(E) - Archaeological Level 1, with pedestaled artifacts in place, looking E. (Only the southern 165 cm has been excavated; the northern extremity of the half-square is under the plank.)

**Les Tambourets, 1980, continued**

b800715	80-7-15	24-Jul-80	Test Pit 3W1. Stratigraphic block showing that Archaeological Level 1 rests directly upon couche C, looking W. Small surface at left is the surface of Archaeological Level 1. The larger surface below it is the surface of couche C, with pedestaled Archaeological Level 1 artifacts upon it. The tape rests on an arbitrary surface within couche C.
b801118	80-11-18	24-Jul-80	Test Pit 3W1. Stratigraphic block (close-up detail) showing that Archaeological Level 1 rests directly upon couche C; looking W. Small surface at left is the surface of A. L. 1. The larger surface below it is the surface of couche C, with pedestaled A. L. 1 artifacts upon it. The tape rests on an arbitrary surface within couche C.
b801120	80-11-20	24-Jul-80	Test Pit 3W5. Measuring and recording the lateral coordinates of artifacts still in situ; looking NW.
b801236	80-12-36	31-Jul-80	IV-A(NW) - Archaeological Level 1, with pedestaled artifacts in place; looking E.
b801302	80-13-2	2-Aug-80	II-A(NE) and II-B(SE) - Archaeological Level 1, with pedestaled artifacts in place; looking W.
b801303	80-13-3	3-Aug-80	Test Pit 3W5. Stratigraphic block showing that the main concentration of artifacts in Archaeological Level 1 is several cm above the surface of couche C; looking W.

**Table E-2. Index to the on-site photographs inventoried in Table E-1.****Archaeological Level 1 in the Main Area, artifacts *in situ* in**

II-A (NE): a80075, b800102  
 III-A (E): a80056, b800713  
 III-A (W): a80053, b800710, b800712  
 IV-A (NW): a80071, a80074, b801236  
 V-A (NE): a73016, a73017, a73018, a73019  
 V-A (SE): a73023, a73024  
 V-A (W): a73025, a73032, b730102  
 V-A (NW): a73034  
 V-A (SW): a73033, b730206, b730308  
 II-B (SE): a80039, a80075, b801302  
 III-B (S): a80039, b800208, b800209, b800310  
 IV-B: a75042, b751308  
 IV-B (E): a75060, b752324, b752326, b752328, b752330, b752332, b752434  
 IV-B(W): a75048  
 V-B (E): a73056, a73062, a73063, a73066, a73067, a73068, b730726, b730828, b730829, b730830, b730931, b730932  
 V-B (W): a73035, a73042, a73043, b730411, b730414  
 VI-B (W): a75009, a75011, b750108  
 VII-B (E): a75036, a75054, a75055, a75131, a75132, b750902, b750904, b751134, b751236, b751238, b751240  
 IV-C: a75041, b751304  
 IV-C (E): a75061, b752502, b752504  
 IV-C (W): a75058, b751810, b751812  
 V-C: a75012, a75013, b750212, b750214  
 V-C (E): a75034, a75035, b750724, b750726, b750728, b750730  
 V-C (W), a75017, b750322, b750324, b750326, b750328, b750330, b753708  
 VI-C: a75056, a75059, b751530, b751532, b751634  
 V-D: a75015, a75016, b750220  
 V-D (E): a75045, a75046, a75047, b751412, b751414, b751416, b751418, b751420, b751522  
 V-D (W): a75018, a75019, b750332, b750434, b750436, b750438

**couche B**

a75003, a75008, b750100, a80034, a80035, a80046, b800102, b800103, b800204, b800418

**couche C (not affected by the Ditch)**

a73044, a73045, a73046, a73047, a73048, a73049, a73050, a73052, a73053, a73071, a73072, a73073, a73074, a73075, b730517, b730518, b730620, b731035, a75022, a75039

**Ditch (and couche C, where interrupted by the Ditch)**

a75021, a75023, a75024, a75025, a75027, a75028, a75029, a75030, a75031, a75032, a75056, a75097, a75144, b750500, b750502, b750504, b750506, b750508, b750610, b750612, b750614, b750616, b750618, b750620, b750722, b751530, b751532, b751634, b752100, b752104, b752106, b752108, b752210, b752212, b752216, b752218, b752220, b753300, b753302, b753306, b7534036, b754038

**General views**

a73001, a73002, a73004, a73009, a73011, a73027, a73028, a73076, b731201, b731202, b731303, b731304, b731305, b731306, b731407, b731408, b731409, b731410, b731511, a75133, b751012, b751020, b753928, b754034, a80084, a80085

**Gensac road-cut section**

a73005, a73013, a73015, a73077, a73078, b731202, b731512, b731513, b754036, b754038

**Table E-2. Index to the on-site photographs inventoried in Table E-1 (continued)**

**Laville sampling columns, in**

V-A: a73057, a73058, a73059, a73060, b730621, b730622, b730723, b730724

V-B: a73037, a73038, a73039, a73069

V-C: a75069, a75070, a75071, a75072, a75073, a75074, a75075, a75076, a75077, a75078, a75079, a75080, a75081, a75125, b752616, b752618, b752620, b752722, b752724, b752726, b752728, b752730, b752732, b752834, b752838, b752900, b752902, b752904, b753410

Test Pit Alpha: a75083, b752506, b752610, b752612, b752614, b752906, b753010, b753012, b753014, b753016, b753018, b753020, b753122, b753124, b753126, b753128, b753130, b753132, b753234, b753238

**Test Pit 2E1**

a80052, a80083, a80084, b800608

**Test Pit 3W1**

a80036, a80045, a80058, a80060, a80061, b800205, b800416, b800715, b801118

**Test Pit 3W3**

a80036, a80037, a80049, b800205, b800502, b800605

**Test Pit 3W5**

a80077, b801303

**Test Pit Alpha and Extensions**

a75004, a75005, a75006, a75007, a75043, a75044, a75057, a75062, a75063, a75064, a75130, b751022, b751706, b751930, b752036

**Test Pit Beta**

a75092, a75093, a75094, a75095, a75096, b750836

**Les Tambourets, 1964**

*a64001*

[return to monograph](#)



Les Tambourets, 1973

a73001

[return to monograph](#)



a73001 4 Jan 1973 The old Gensac road, dividing Area 3, on the left, from Area 2, on the right; looking E.

a73002

[return to monograph](#)



a73002 4 Jan 1973 Entry into Area 3 field from old Gensac road. Archaeological Level 1 crops out in the road-cut section beyond the auto. Looking NE.

a73004

[return to monograph](#)



a73004 4 Jan 1973 Location of Main Area of the 1973, 1975, and 1980 excavations, along the S edge of Area 3; looking E. The barn in the right background, belonging to the Portet family, was used as an on-site lab.

a73005



Les Tambourets, 1973

a73006

[return to monograph](#)



a73006 4 Jan 1976 Road cut through Area Ferme along "new" road; looking SE. Cobble/pebble layer underlies loess body containing the Châtelperronian archaeological level.

a73007

[return to monograph](#)



a73007 4 Jan 1973 Road cut through Area Ferme along "new" road; looking NW, with town of Cazères visible in the distance across the Garonne River. The cobble/pebble layer is stratigraphically well below the Châtelperronian archaeological level.

a73008



a73009



Les Tambourets, 1973

a73011



a73013



a73015



a73016



Les Tambourets, 1973

a73017



a73018



a73019



a73023



Les Tambourets, 1973

a73024



a73025



a73028



a73027

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a73027 20 Jul 1973 Main Area. General view of the 1973 test excavation; looking SW.

Les Tambourets, 1973

a73032



a73033



a73034



a73035



Les Tambourets, 1973

a73037

[return to monograph](#)



a73037 27 Jul 1973 V-B. Henri Laville removing samples from the column in the NW corner of the square for sedimentological and palynological analyses; looking NW.

a73038



a73039



a73041

[return to monograph](#)



a73041 28 Jul 1973 Main Area. Visit of Hallam L. Movius, Jr., to Les Tambourets (with Harvey Bricker); looking E.

Les Tambourets, 1973

a73042



a73043



a73044



a73045



Les Tambourets, 1973

a73046

[return to monograph](#)



a73046 30 Jul 1973 V-B(W) - Surface of couche C; looking NW. Markers show locations of suspected postmolds, subsequently disconfirmed and demonstrated to be filled animal burrows.

a73047



a73048

[return to monograph](#)



a73048 30 Jul 1973 V-B(W) - couche C; looking N. Suspected postmold, when sectioned, reveals U-shaped filled animal burrow.

a73049



Les Tambourets, 1973

a73050



a73052



a73053



a73054



Les Tambourets, 1973

a73055



a73056



a73057

[return to monograph](#)



a73057 2 Aug 1973 V-A(NE) - Laville sample column in NE corner of square; looking E. Markers are at the boundaries of the couches--A/B, B/C, and C/D, respectively.

a73058



Les Tambourets, 1973

a73059



a73060



a73062



a73063



Les Tambourets, 1973

a73064



a73066



a73067



a73068



Les Tambourets, 1973

a73069

[return to monograph](#)



a73069 3 Aug 1973 V-B(NW) Laville sample column in NW corner of square; looking E. Marker is at the boundary of couches A and B.

a73070



a73071



a73072



Les Tambourets, 1973

a73073



a73074

[return to monograph](#)



a73074 5 Aug 1973 V-B(E) - Surface of couche C, showing its topographic irregularity; looking N. Markers are in centers of depressions.

a73075



a73076



Les Tambourets, 1973

a73077



a73078



b730102



b730206



Les Tambourets, 1973

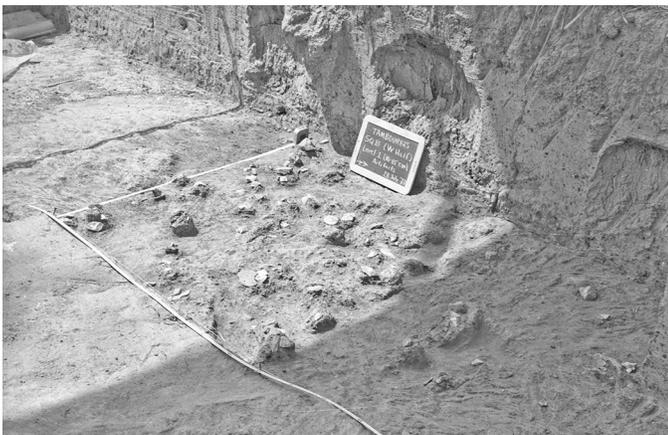
b730308



b730411



b730414

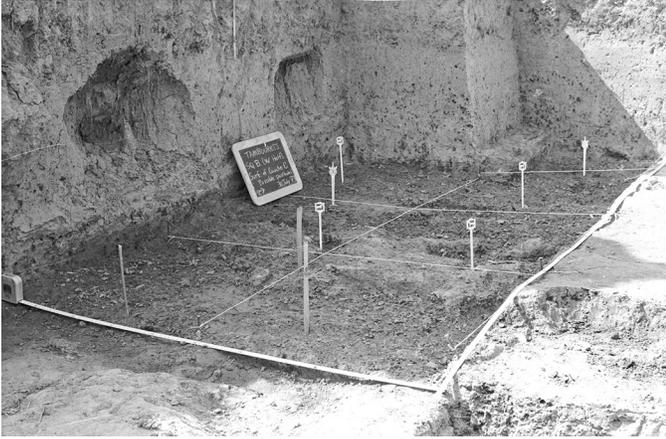


b730517

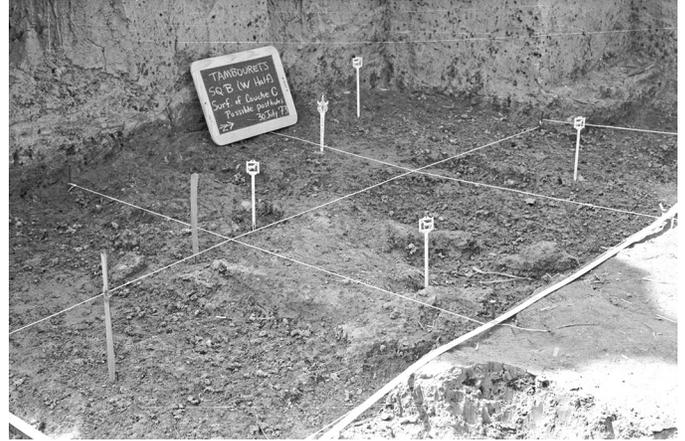


Les Tambourets, 1973

b730518



b730620



b730621



b730622

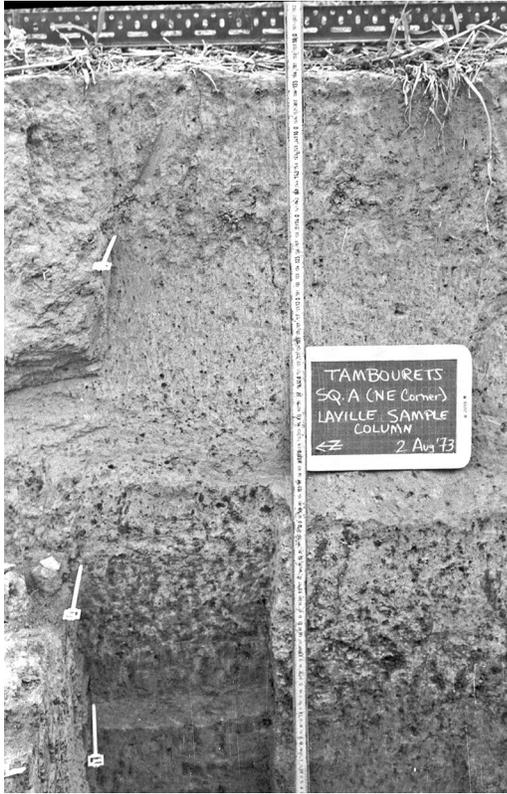
[return to monograph](#)



b730622 2 Aug 1973 V-A(NE) - Laville sample column in NE corner of square; looking E. Markers are boundaries of the couches--A/B, B/C, and C/D, respectively.

Les Tambourets, 1973

b730723



b730724



b730726



b730828



Les Tambourets, 1973

b730829



b730830



b730931



b730932



Les Tambourets, 1973

b731035



b731201

[return to monograph](#)



b731201 4 Jan 1973 The old Gensac road, dividing Area 3, on the left, from Area 2, on the right; looking E.

b731202

[return to monograph](#)



b731202 4 Jan 1973 Entry into Area 3 field from old Gensac road. Archaeological Level 1 crops out in the road-cut section beyond the auto. Looking NE.

b731303



Les Tambourets, 1973

b731304



b731305



b731306



b731407

[return to monograph](#)



b731407 4 Jan 1973 Looking SE from the entry into the Area 3 field toward Portet house and Area 2. Line of trees to right of house is on the E edge of the +30 m terrace. Test Pit 2E1, excavated in 1980, was along this line of trees. Trees at bottom of slope on the right are in the valley of the unnamed stream forming the S boundary of Les Tambourets.

Les Tambourets, 1973

b731408

[return to monograph](#)



b731408 4 Jan 1973 Looking S from entry into Area 3 field across the old Gensac road and part of Area 2. Trees at bottom of the slope are in the valley of the unnamed stream separating Les Tambourets from Rachat, which is on the slope across the road in the distance.

b731409

[return to monograph](#)



b731409 4 Jan 1973 View to NE across Area 3 toward Area Tambourets-Terssac. Trees in center of photo are on the E edge of the +30 m terrace. To left of these trees, modern field slopes down to Area T-T. The small Area 4 is beyond the trees, down on the +15 m terrace.

b731410

[return to monograph](#)



b731410 4 Jan 1973 Looking N from entry into field across Area 3 (foreground) and Area Ferme (in distance). New road, not visible, cuts through Area Ferme in front of farm complex (la métairie).

b731511



Les Tambourets, 1973

b731512



b731513



Les Tambourets, 1975

a75003



a75004



Les Tambourets, 1975

a75005

[return to monograph](#)



a75005 27 Jun 1975 Looking W from the Main Area along S edge of Area 3 toward location of Test Pit Alpha at the start of its excavation.

a75006



a75007



a75008

[return to monograph](#)



a75008 27 Jun 1975 V-D - couche B(5-25 cm). Association of broken cobbles; looking N.

Les Tambourets, 1975

a75009



a75011



a75012

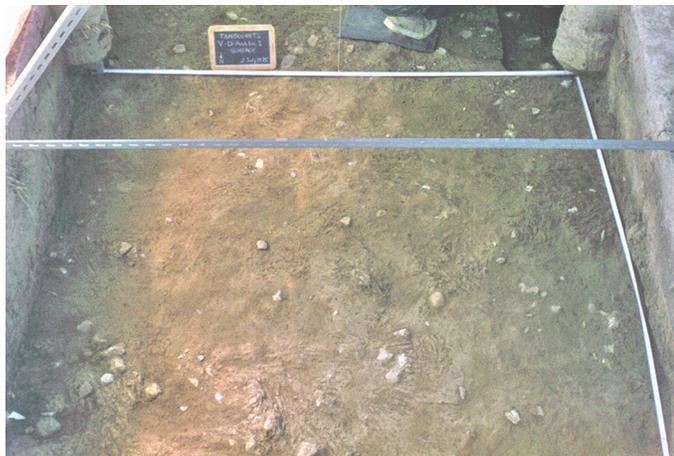


a75013



Les Tambourets, 1975

a75015



a75016



a75017



a75018



Les Tambourets, 1975

a75019



a75021



a75022



a75023



a75023 9 Jul 1975 VI-B & VII-B - Bottom of the Ditch. To the left of the Ditch in VI-B is the surface of couche C. To the right of the Ditch in VII-B, excavation in progress has not yet exposed the surface of Archaeological Level 1. Looking NW.

Les Tambourets, 1975

a75024



a75025



a75027



a75028



Les Tambourets, 1975

a75029



a75030



a75031



a75032



Les Tambourets, 1975

a75034



a75035



a75036



a75039



Les Tambourets, 1975

a75040

[return to monograph](#)

a75041



a75040 19 Jul 1975 Test Pit Beta - Surface of Archaeological Level 1; looking S. Laville column (not sampled) is in the NE corner.



a75042

a75043



Les Tambourets, 1975

a75044

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a75044 21 Jul 1975 Test Pit Alpha. Exploratory spits dug in Sedimentary Ensembles I and II in an attempt (ultimately successful!) to determine the slope of the Pleistocene land surface upon which Châtelperronian artifacts accumulated; looking S.

a75045



a75046

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a75046 22 Jul 1975 V-D(E) - Archaeological Level 1, with ped-estaled artifacts in place; looking NE.

a75047



Les Tambourets, 1975

a75048

[return to monograph](#)



a75054



a75055



a75056

[return to monograph](#)



a75056 25 Jul 1975 VI-C - couche B(Basal) and Archaeological Level 1, on left, and Ditch, on right, with pedestaled artifacts in place; looking N. (Excavation had not yet reached the surface of A. L. 1 in the entire area left of the Ditch.)

Les Tambourets, 1975

a75057

[return to monograph](#)



a75057 26 Jul 1975 Test Pit Alpha - small portion of Sedimentary Ensemble II (excavated as "Below couche B(20-25 cm)", with pedestaled artifacts in place along E wall; looking E.

a75058



a75059



a75060



Les Tambourets, 1975

a75061



a75062 [return to monograph](#)



a75062 5 Aug 1975 Test Pit Alpha Extension-1 and Extension-2. Excavating Sedimentary Ensemble I to different depths to expose the surface of the Châtelperronian archaeological level (S. E. II) on the slope of the Pleistocene land surface as determined in Test Pit Alpha; looking N.

a75063



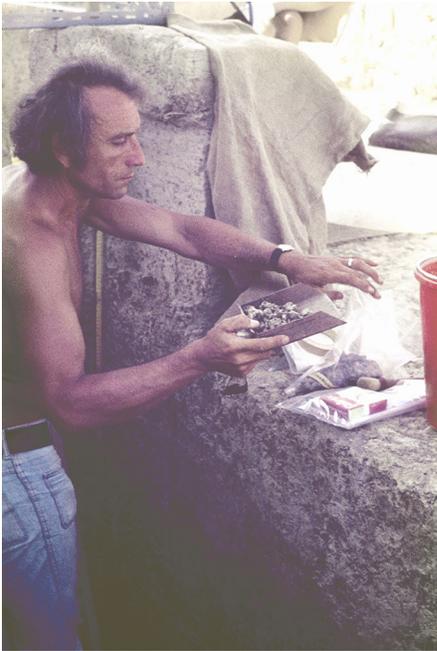
a75064



Les Tambourets, 1975

a75069

[return to monograph](#)



a75069 6 Aug 1975 V-C. Henri Laville removing samples from column in SW corner of square for sedimentological and palynological analyses; looking NW.

a75070

[return to monograph](#)



a75070 9 Aug 1975 V-C - Laville column. Top of sample column (couches A, B, and C); looking NW.

a75071

[return to monograph](#)



a75071 9 Aug 1975 V-C - Laville column. Middle of sample column (couches C and D); looking NW.

a75072

[return to monograph](#)



a75072 9 Aug 1975 V-C - Laville column. Bottom of sample column (couches D through M); looking NW.

Les Tambourets, 1975

a75073

[return to monograph](#)



a75073 9 Aug 1975 V-C - Laville column. Entire sample column (couches A through M); looking NW.

a75074

[return to monograph](#)



a75074 9 Aug 1975 V-C - Laville column. Detail of the boundary between couche B and couche C; looking N. Archaeological Level 1 is at the base of couche B.

a75075



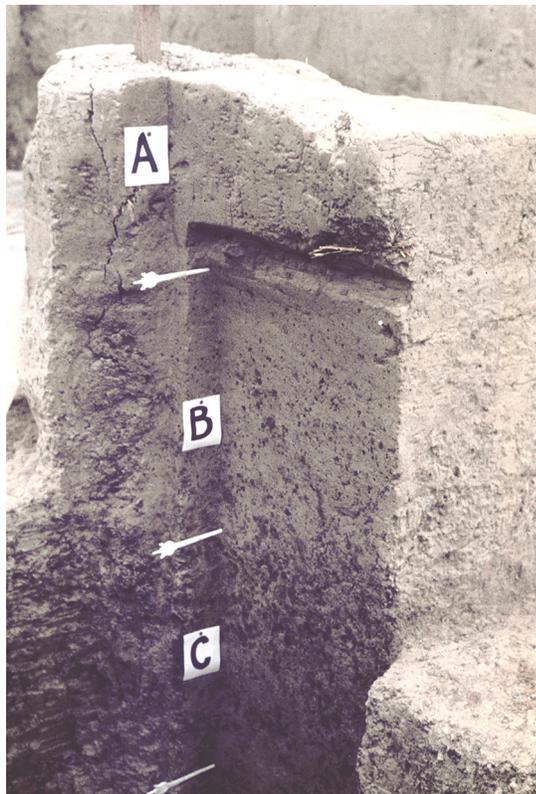
a75076



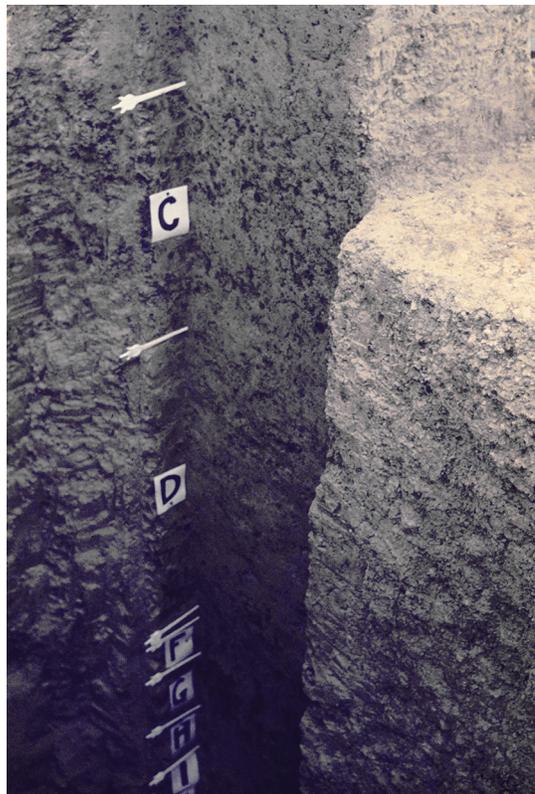
a75076 9 Aug 1975 V-C - Laville column. Detail of concretions in couche G; looking N.

Les Tambourets, 1975

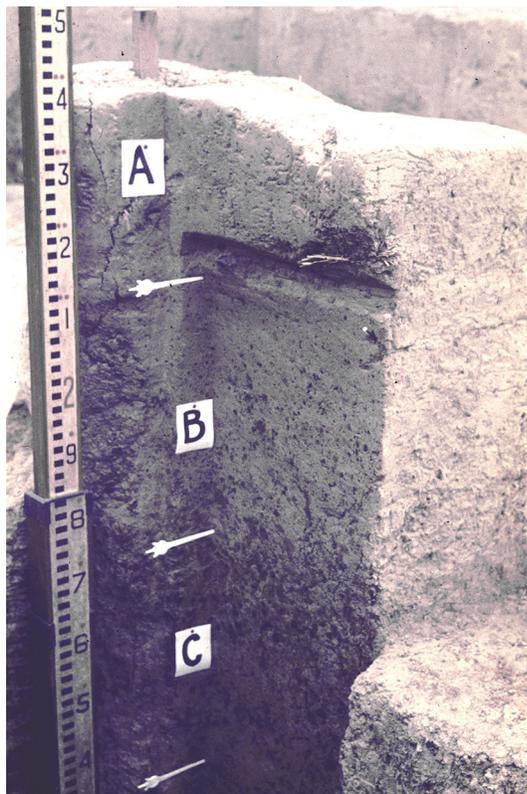
a75077



a75078



a75079



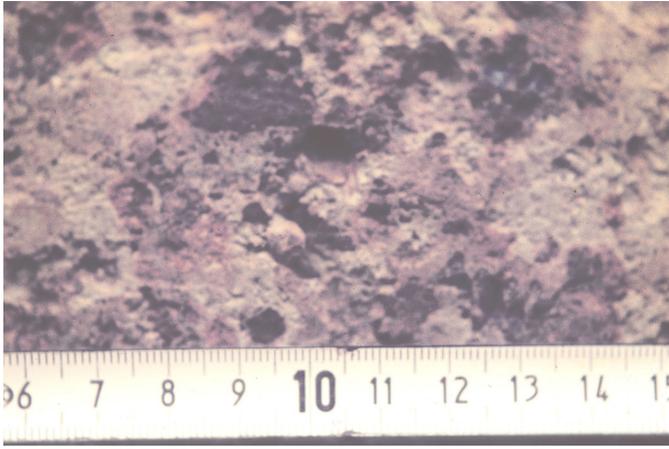
a75080



Les Tambourets, 1975

a75081

[return to monograph](#)



a75081 9 Aug 1975 V-C - Laville column. Detail of couche C after wetting of the section; looking N.

a75083

[return to monograph](#)



a75083 9 Aug 1975 Test Pit Alpha. Laville sample column in NW corner of square; looking N.

a75092



a75093



Les Tambourets, 1975

a75094 [return to monograph](#)



a75094 9 Aug 1975 Test Pit Beta. Frost wedge or crack (*fente en coin*) to left of stadia rod on E wall of square; looking E. The crack, originating in couche B, is 12.5 cm wide at the top. It angles down and to the left through couche C and underlying sediments. The bottom of the crack is ca. 55 cm below the top.

a75095



a75096



a75097



Les Tambourets, 1975

a75119



a75125



a75126



a75130

[return to monograph](#)



a75130 July 1975 Test Pit Alpha - Near the base of Sedimentary Ensemble I, excavated as "below couche B". Excavation in progress. (Fred Fowler photo)

Les Tambourets, 1975

a75132



a75131



a75133



a75134

[return to monograph](#)



a75134 August 1975 Main Area. The crew of the 1975 season; looking NW. (Fred Fowler photo)

Les Tambourets, 1975

a75137

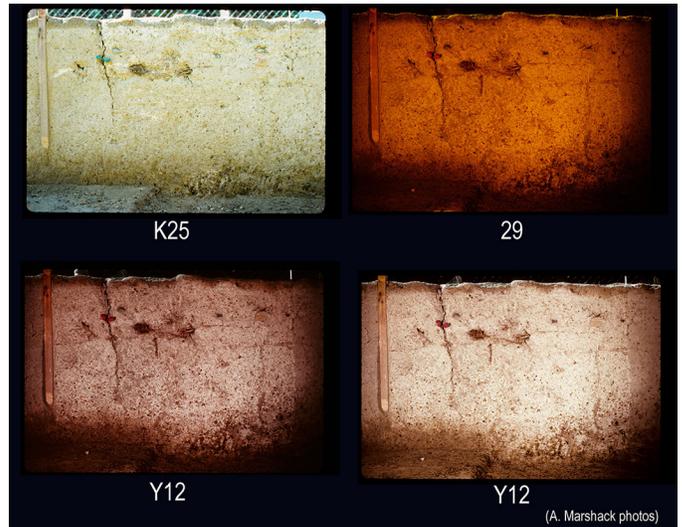
[return to monograph](#)



a75137 Summer 1975 Excavation tools: picks, brush, and *crochets*. (Fred Fowler photo)

a75144

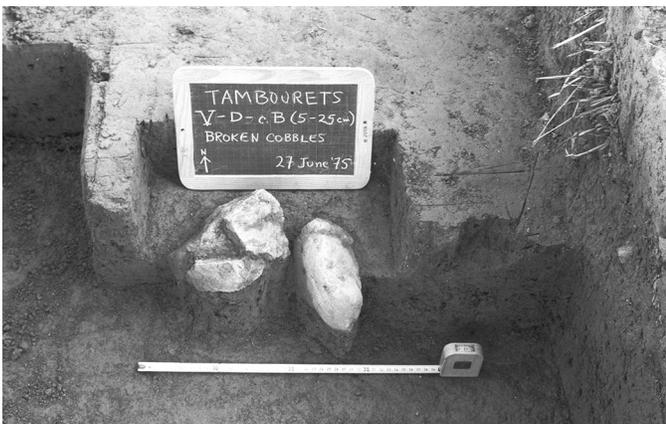
[return to monograph](#)



a75144 14 Aug 1975 VI-B - Infrared photos of the south wall of the square taken at night by Alexander Marshack in an attempt to recognize the western wall of the Ditch in couche B; looking S. K25: regular color; 29: filter retains only red-infrared; Y12: filter eliminates blue, violet, and ultraviolet.

b750100

[return to monograph](#)



b750100 27 Jun 1975 V-D - couche B(5-25 cm). Association of broken cobbles; looking N.

b750108



Les Tambourets, 1975

b750212



b750214



b750322



b750220

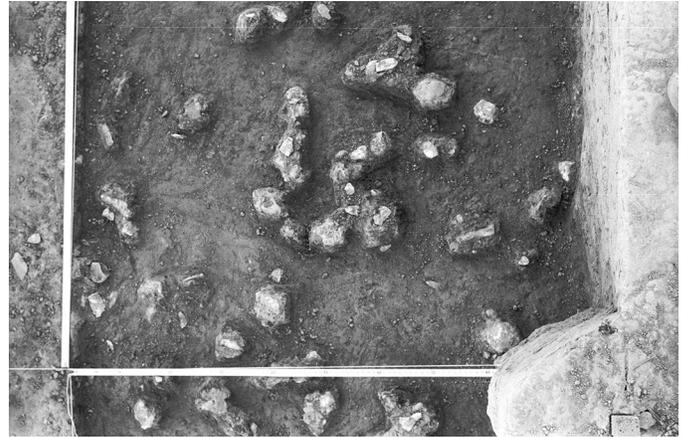


Les Tambourets, 1975

b750324



b750326



b750328



b750330



Les Tambourets, 1975

b750332



b750434



b750436



b750438



Les Tambourets, 1975

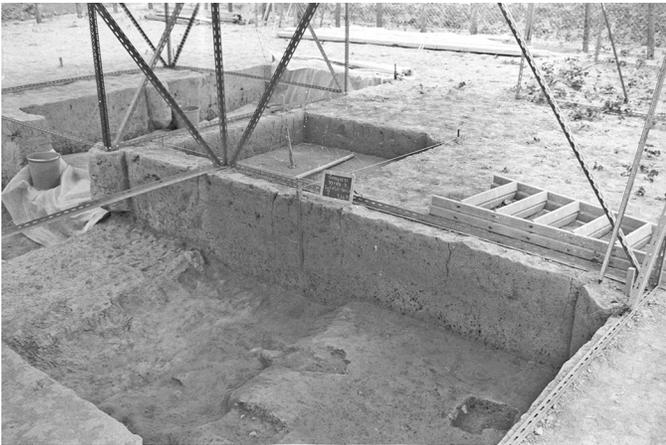
b750500



b750502



b750504

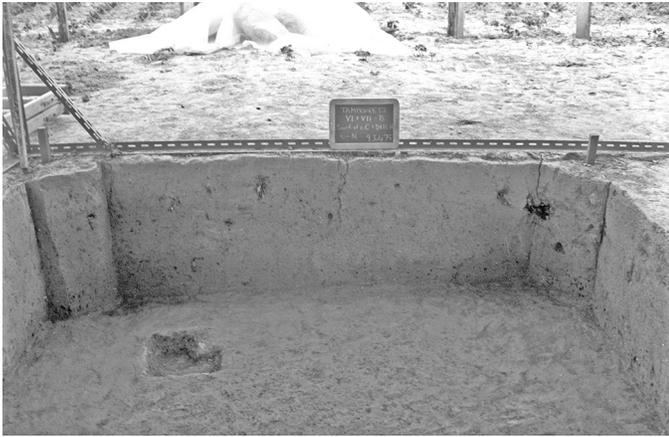


b750506



Les Tambourets, 1975

b750508



b750610



b750612



b750614



Les Tambourets, 1975

b750616



b750618



b750620



b750722



Les Tambourets, 1975

b750724



b750726



b750728



b750730



Les Tambourets, 1975

b750836

[return to monograph](#)



b750836 10 Jul 1975 Test Pit Beta. Start of excavation by removal of plough zone; looking E. Building visible across Gensac road in Area 2 is Portet's barn, in which the on-site lab was located.

b750902



b750904



b750908

[return to monograph](#)



b750908 11 Jul 1975 Washed artifacts drying on numbered grid in on-site lab in Portet's barn before numbers are inked.

Les Tambourets, 1975

b750910

[return to monograph](#)



b750910 11 Jul 1975 Inking numbers on artifacts in the on-site lab in Portet's barn.

b751012



b751020



b751022

[return to monograph](#)



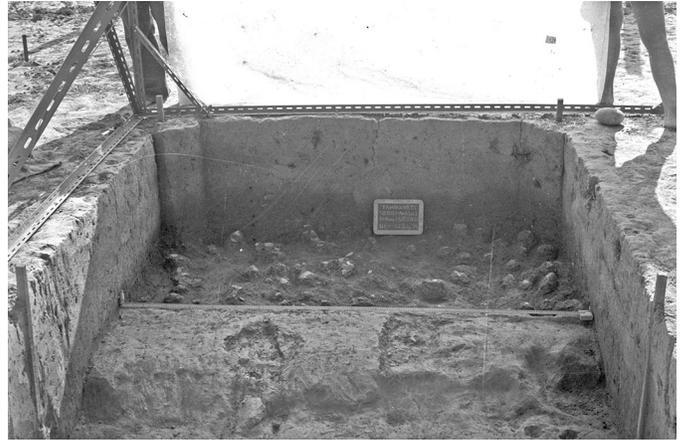
b751022 11 Jul 1975 Test Pit Alpha, under excavation; looking W.

Les Tambourets, 1975

b751134



b751236



b751238



b751240



Les Tambourets, 1975

b751302



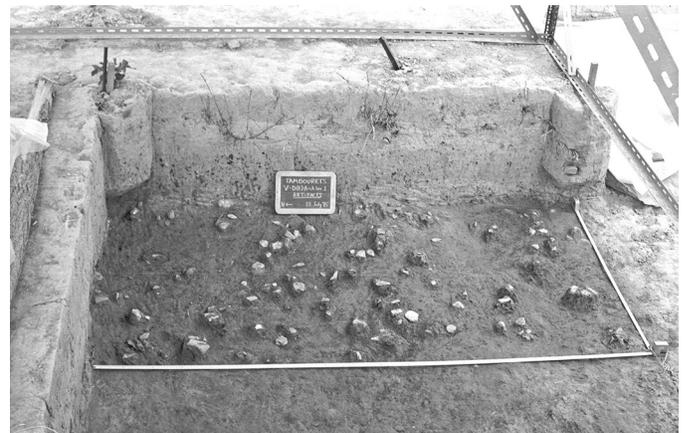
b751304



b751308



b751412



Les Tambourets, 1975

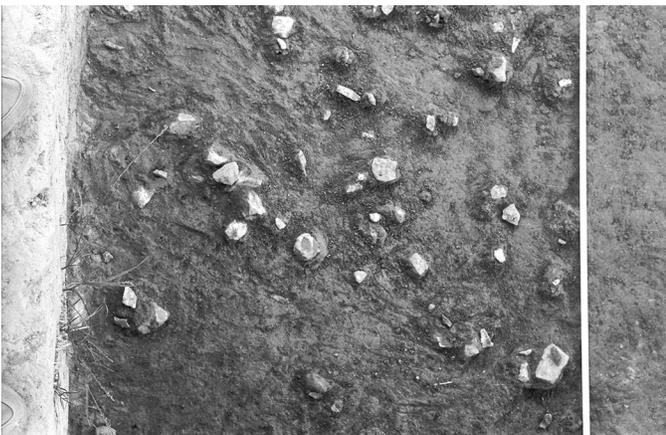
b751414



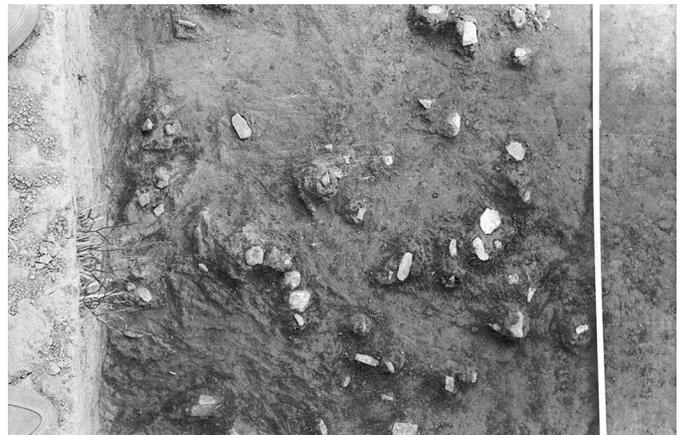
b751416



b751418



b751420



Les Tambourets, 1975

b751522



b751524

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b751524 22 Jul 1975 Main Area. Visit of Hallam L. Movius, Jr., to Les Tambourets (with Nancy Movius, Arden King); looking N.

b751528



b751530

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b751530 25 Jul 1975 VI-C - couche B(Basal) and Archaeological Level 1, on left, and Ditch, on right, with pedestaled artifacts in place; looking N. (Excavation had not yet reached the surface of A. L. 1 in the entire area left of the Ditch.)

Les Tambourets, 1975

b751532



b751634



b751638



b751706

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Les Tambourets, 1975

b751810

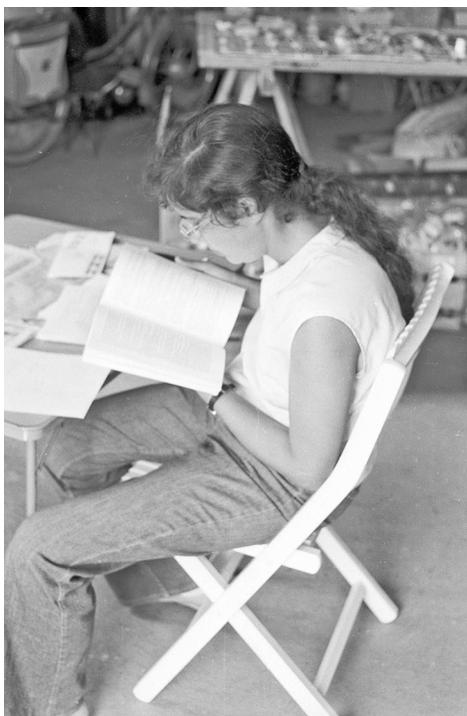


b751812



b751814

[return to monograph](#)



b751814 28 Jul 1975 Victoria Bricker in the on-site lab in Portet's barn.

b751922

[return to monograph](#)



b751922 28 Jul 1975 Main Area - Isabella King recording artifact coordinates being read to her by excavator in an adjacent square.

Les Tambourets, 1975

b751930



b752036



b752100



b752104

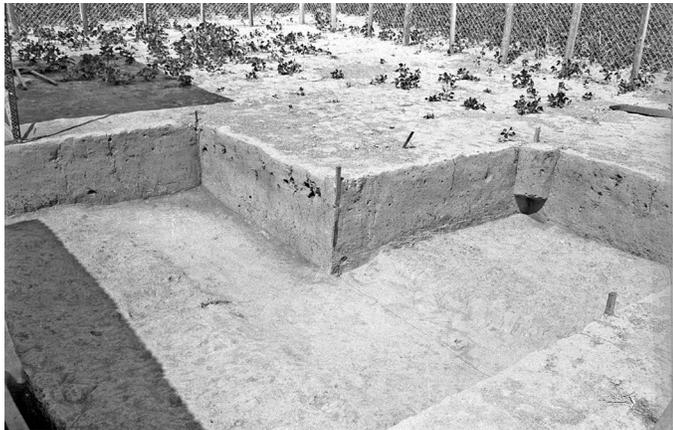
[return to monograph](#)



b752104 31 Jul 1975 VI-C - Surface of couche C, to left, and bottom of Ditch, to right; looking N. West wall of Ditch not detectable in couche B in section of north wall of square.

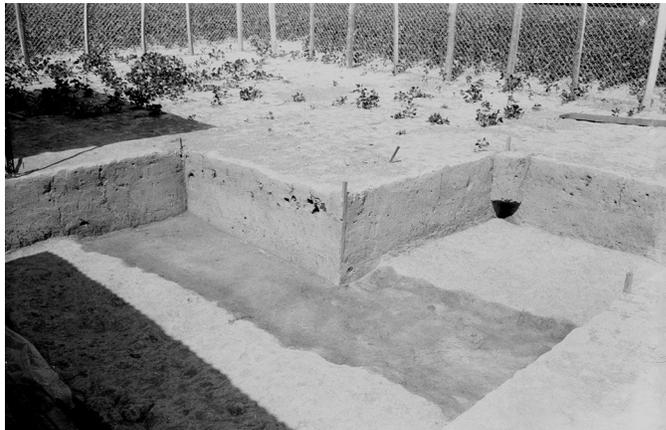
Les Tambourets, 1975

b752106



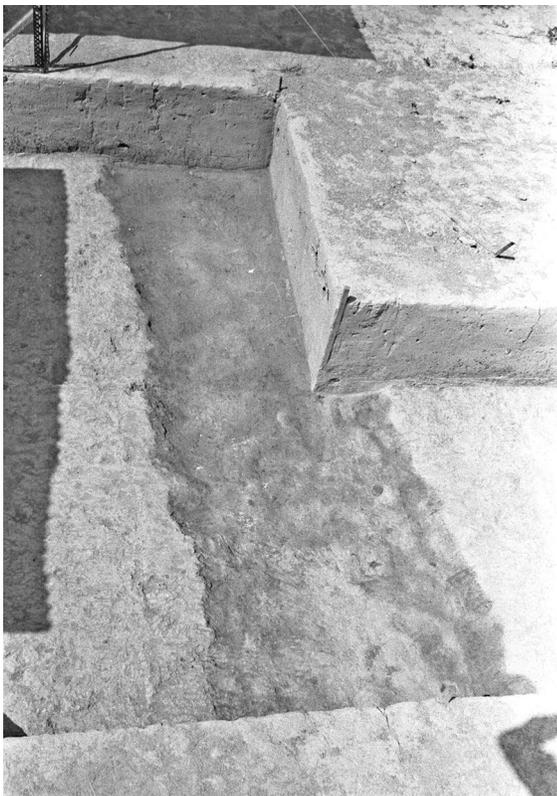
b752108

[return to monograph](#)



b752108 31 Jul 1975 VI-B, VI-C, & VII-B - Bottom of Ditch, moistened for visual contrast with sediment of couche C, into which it extends; looking NE.

b752210



b752212



Les Tambourets, 1975

b752216

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b752218



b752216 31 Jul 1975 VI-B, VI-C, & VII-B - Bottom of Ditch, moistened for visual contrast with sediment of couche C, into which it extends; looking SE.

b752220

b752322



Les Tambourets, 1975

b752324



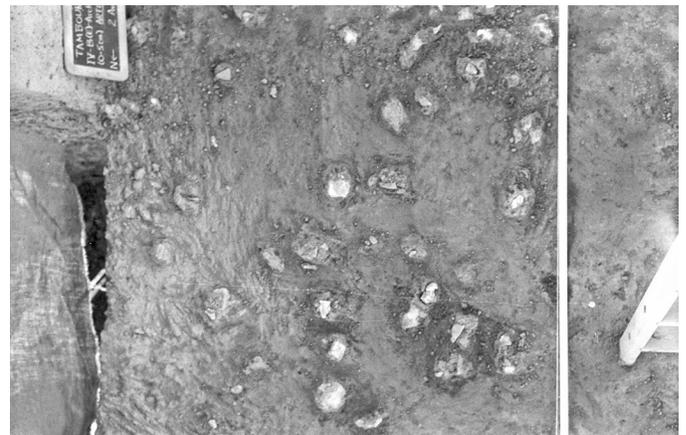
b752326



b752328

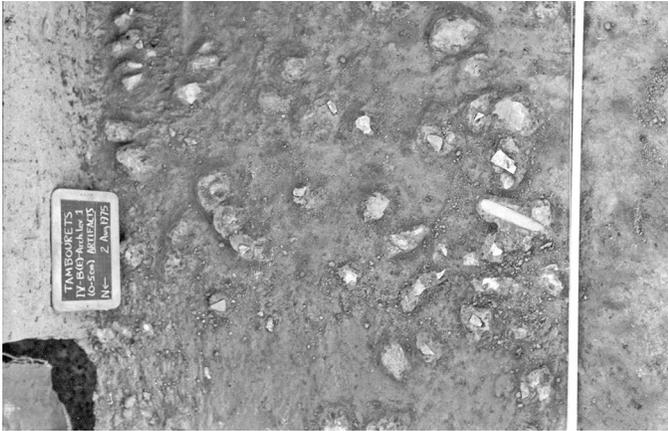


b752330



Les Tambourets, 1975

b752332



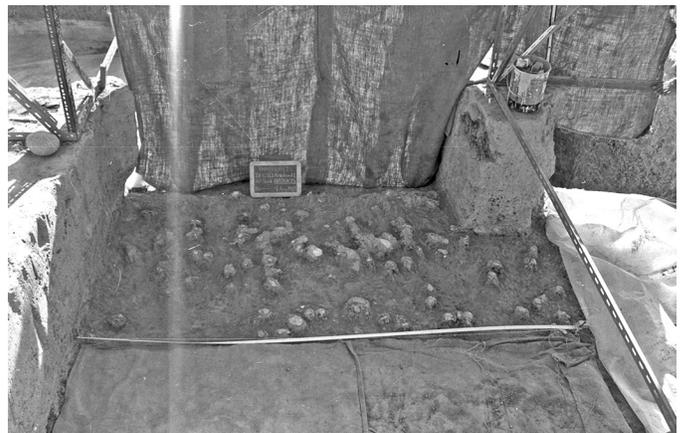
b752434



b752501

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b752502



b752501 4 Aug 1975 Main Area. Jean Clottes on a *visite de contrôle* to Les Tambourets (with Harvey Bricker); looking NE.

Les Tambourets, 1975

b752506

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b752504



b752506 7 Aug 1975 Test Pit Alpha - Laville sample column in NW corner of test pit. Henri Laville taking samples for sedimentological and palynological analyses; looking N.

b752610

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b752610 7 Aug 1975 Test Pit Alpha - Laville sample column in NW corner of test pit. Henri Laville taking samples for sedimentological and palynological analyses; looking NW.

b752612



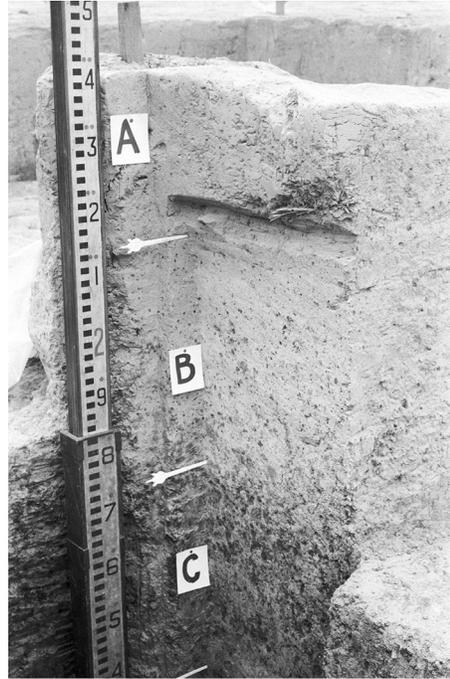
Les Tambourets, 1975

b752614



b752616

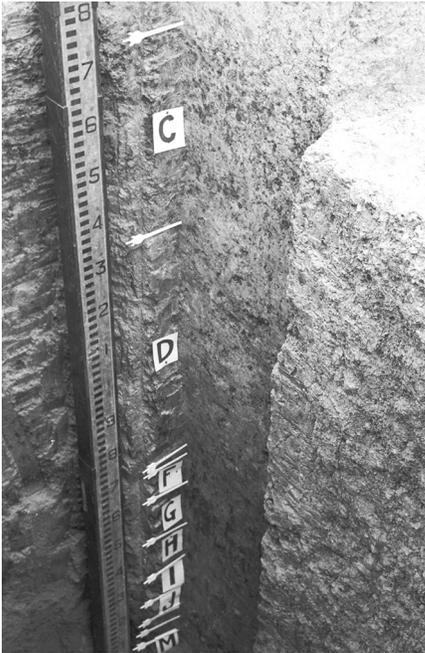
[return to monograph](#)



b752616 9 Aug 1975 V-C - Laville column. Top of sample column (couches A, B, and C); looking NW.

b752618

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b752618 9 Aug 1975 V-C - Laville column. Middle and bottom of sample column (couches C through M); looking NW.

b752620

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b752620 9 Aug 1975 V-C - Laville column. Bottom of sample column (couches D through M); looking NW.

Les Tambourets, 1975

b752722



b752724

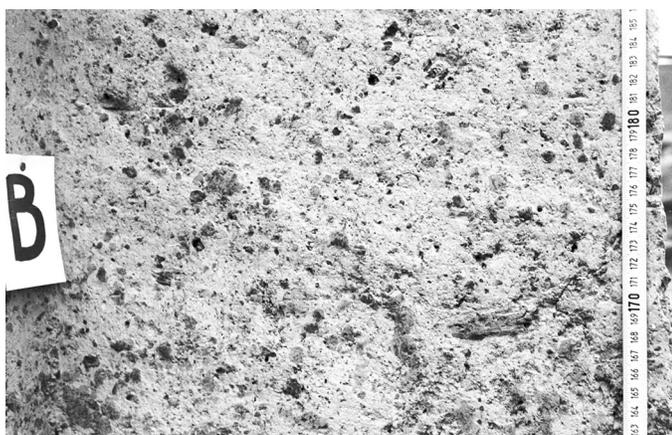
[return to monograph](#)



b752724 9 Aug 1975 V-C - Laville column. Detail of upper part of couche B and base of couche A (the plough zone); looking N. (The tape shows relative scale only, not the depth below site zero.)

b752726

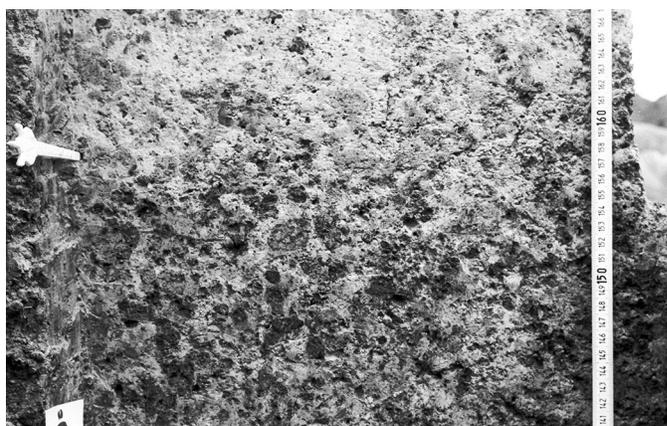
[return to monograph](#)



b752726 9 Aug 1975 V-C - Laville column. Detail of middle part of couche B. (The tape shows relative scale only, not the depth below site zero.)

b752728

[return to monograph](#)

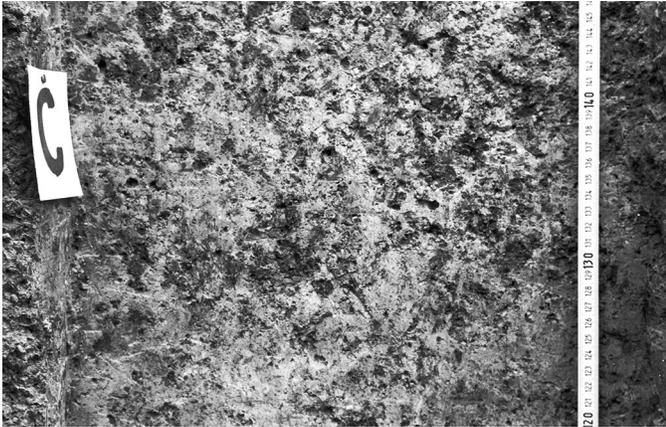


b752728 9 Aug 1975 V-C - Laville column. Detail of the boundary between couche B and couche C; looking N. Archaeological Level 1 is at the base of couche B. (The tape shows relative scale only, not the depth below site zero.)

Les Tambourets, 1975

b752730

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b752730 9 Aug 1975 V-C - Laville column. Detail of upper and middle parts of couche C; looking N. (The tape shows relative scale only, not the depth below site zero.)

b752732

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b752732 9 Aug 1975 V-C - Laville column. Detail of lower part of couche C and upper part of couche D; looking N. Marker is at C/D boundary. (The tape shows the relative scale only, not the depth below site zero.)

b752834

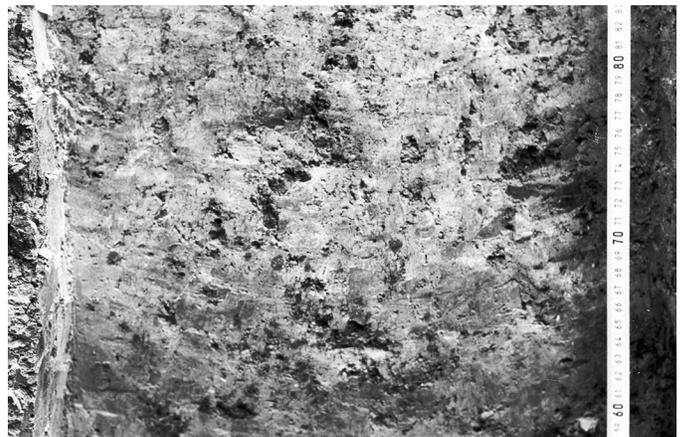
[return to monograph](#)



b752834 9 Aug 1975 V-C - Laville column. Detail of upper middle part of couche D; looking N. (The tape shows relative scale only, not the depth below site zero.)

b752836

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b752836 9 Aug 1975 V-C - Laville column. Detail of lower-middle part of couche D; looking N. (The tape shows relative scale only, not the depth below site zero.)

Les Tambourets, 1975

b752838

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b752838 9 Aug 1975 V-C - Laville column. Detail of base of couche D, couches E and F, and upper part of couche G; looking N. (The tape shows relative scale only, not the depth below site zero.)

b752900

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b752900 9 Aug 1975 V-C - Laville column. Detail of lower part of couche G and upper part of couche H; looking N. OUT OF FOCUS

b752902

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b752902 9 Aug 1975 V-C - Laville column. Detail of base of couche H, couches I and J, and upper part of couche K; looking N. (The tape shows relative scale only, not the depth below site zero.)

b752904

[return to monograph](#)

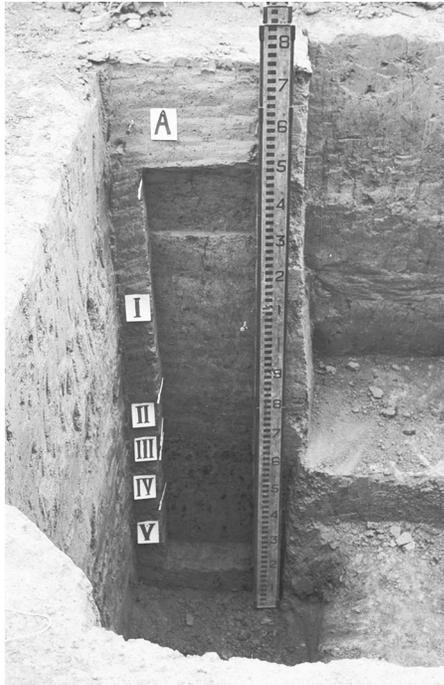


b752904 9 Aug 1975 V-C - Laville column. Detail of sediments from base of couche H to top of couche M; looking N. (The tape shows relative scale only, not depth below site zero.)

Les Tambourets, 1975

b752906

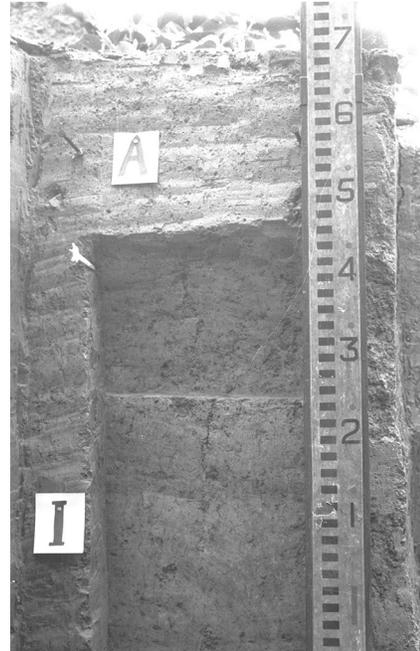
[return to monograph](#)



b752906 9 Aug 1975 Test Pit Alpha. Laville sample column in NW corner of square; looking N.

b753010

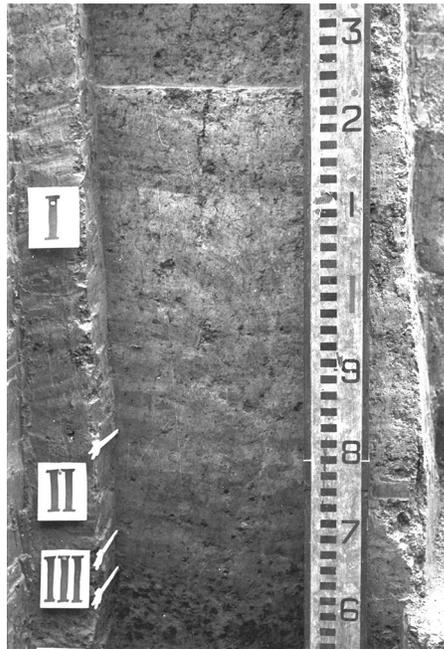
[return to monograph](#)



b753010 9 Aug 1975 Test Pit Alpha - Laville sample column. Top of column (couche A and top of Sedimentary Ensemble I; looking N.

b753012

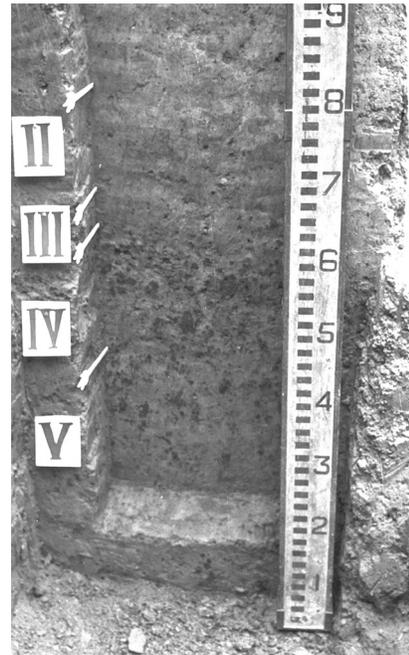
[return to monograph](#)



b753012 9 Aug 1975 Test Pit Alpha - Laville sample column. Middle portion of column (Sedimentary Ensemble I [bottom], S. E. II, and S. E. III); looking N.

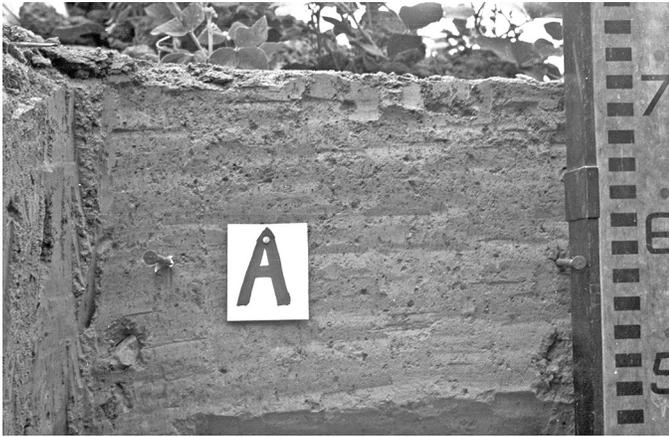
b753014

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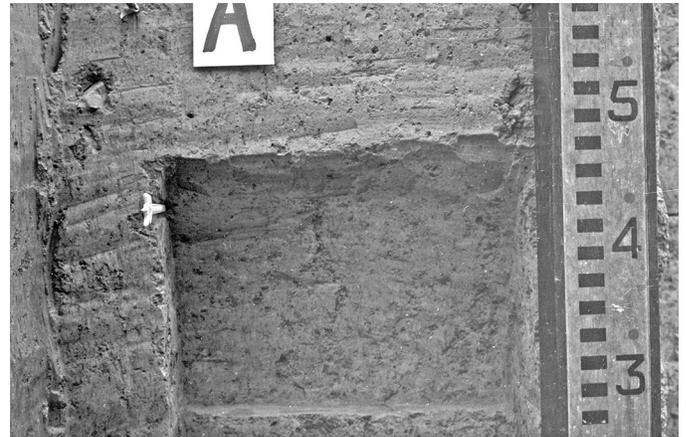


b753014 9 Aug 1975 Test Pit Alpha - Laville sample column. Bottom of column (Sedimentary Ensemble II [bottom], S. E. III, S. E. IV, and S. E. V [top]); looking N.

b753016



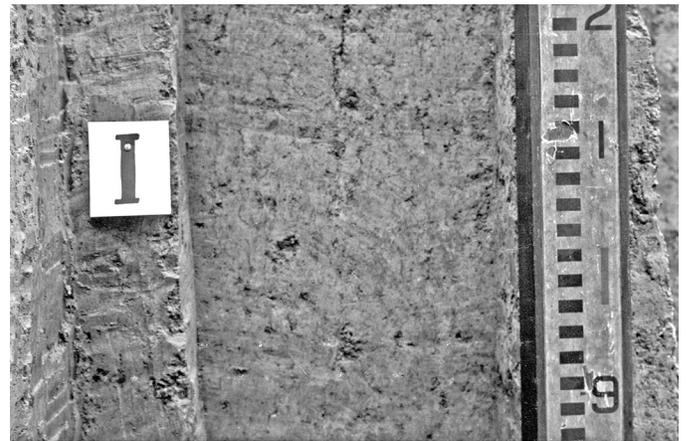
b753018



b753020



b753122



Les Tambourets, 1975

b753124



b753126

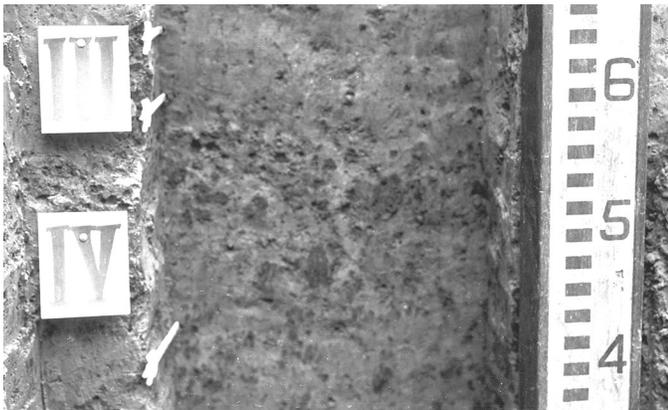
[return to monograph](#)



b753126 9 Aug 1975 Test Pit Alpha - Laville sample column. Detail of Sedimentary Ensembles II, III, and top of IV; looking N. Shallow gully eroded into surfacr of S. E. IV is filled with lighter colored S. E. III sediment.

b753128

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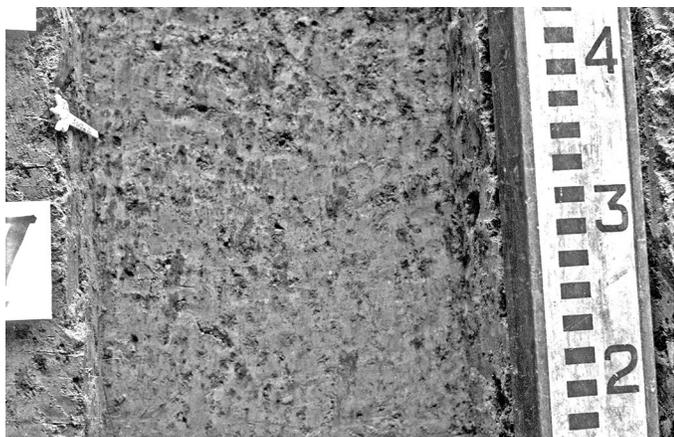
b753128 9 Aug 1975 Test Pit Alpha - Laville sample column. Detail of Sedimentary Ensembles III, IV, and top of V; looking N. Shallow gully eroded into surface of S. E. IV is filled with lighter colored S. E. III sediment.

b753130



Les Tambourets, 1975

b753132



b753234



b753238

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b753238 9 Aug 1975 Test Pit Alpha.  
Laville sample column in NW corner of square; looking N.

b753300



Les Tambourets, 1975

b753302



b753306



b753410

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b753708

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b753708 18 Aug 1975 V-C - Archaeological Level 1. Excavation of the remnant of the Laville sample column; numbering of artifacts *in situ* before measuring their coordinates.

Les Tambourets, 1975

b753816

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b753816 18 Aug 1975 M et Mme Ponsaty, in center of photo, and their family and employees, from the Hotel Cochon de Lait in Cazères, hosting a surprise on-site champagne party for the crew at Les Tambourets.

b753928



b754034



b754036

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b754036 21 Aug 1975 North face of the Gensac road-cut section, showing the continuation of the Ditch encountered in Trenches VI and VII of the Main Area; looking N.

Les Tambourets, 1975

b754038

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b754038 21 Aug 1975 North face of the Gensac road-cut section, showing the continuation of the Ditch encountered in Trenches VI and VII of the Main Area; looking NE.

Les Tambourets, 1980

a80034



a80035



Les Tambourets, 1980

a80036

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a80036 4 Jul 1980 Test Pits 3W1 and 3W3. Looking W along line between Squares B and C (clearing in wheat). TP3W1 (staked) in foreground; TP3W3 under excavation farther W.

a80037

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a80037 9 Jul 1980 Test Pit 3W3, under shelter, as viewed from Main Area; looking W.

a80039



a80042



Les Tambourets, 1980

a80043



a80043 17 Jun 1980 Main Area. Using the Wye level.

a80044

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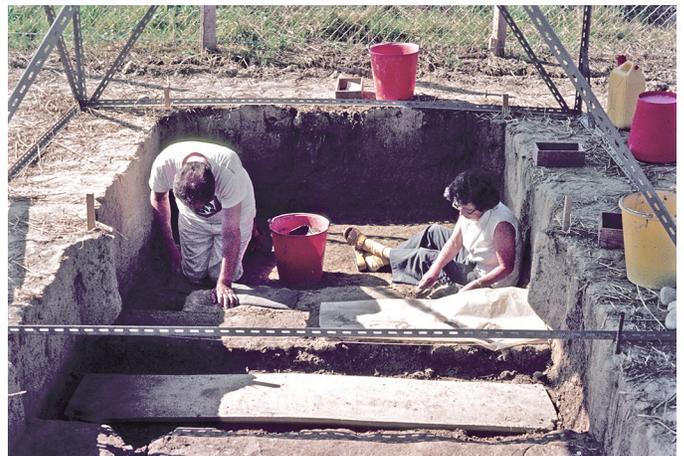


a80044 17 Jul 1980 Main Area. Using the Wye level and range pole to determine the depth of artifacts; looking SE.

a80045



a80046



Les Tambourets, 1980

[a80049 return to monograph](#)

a80047



a80049 18 Jul 1980 Test Pit 3W3. Stratigraphic block showing that Archaeological Level 1 rests directly upon couche C; looking E. Low face is a cut through A. L. 1. Surface at base of low cut is the surface of couche C, with A. L. 1 artifacts pedestaled in place. Vertical face in foreground is a cut through couche C(0-5 cm), with the horizontal tape at the base of this cut.

a80052

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a80052 21 Jul 1980 Test Pit 2E1. Stratum III surface; looking S. Knife in section wall marks surface of Stratum II; tape and slate rest on surface of Stratum III.

a80053



Les Tambourets, 1980

a80056



a80058

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a80058 24 Jul 1980 Test Pit 3W1. Stratigraphic block showing that Archaeological Level 1 rests directly upon couche C; looking W. Small surface at left is the surface of A. L. 1. The larger surface below it is the surface of couche C, with pedestaled A. L. 1 artifacts upon it. The tape rests on an arbitrary surface within couche C.

a80061

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a80061 24 Jul 1980 Test Pit 3W1. Stratigraphic block (close-up detail) showing that Archaeological Level 1 rests directly upon couche C; looking W. Small surface at left is the surface of A. L. 1. The larger surface below it is the surface of couche C, with pedestaled A. L. 1 artifacts upon it. The tape rests on an arbitrary surface within couche C.

a80066

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a80066 24 Jul 1980 Main Area. Owners of this part of Les Tambourets (Area 3), M et Mme Yvon Dubois, with Victoria and Harvey Bricker.

Les Tambourets, 1980

a80067



a80068



a80070

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a80070 30 Jul 1980 IV-A(NW) - Harvey Bricker excavating Archaeological Level 1; looking NE. (Victoria Bricker photo)

a80071



Les Tambourets, 1980

a80074



a80075



a80077

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a80080



a80077 3 Aug 1980 Test Pit 3W5. Stratigraphic block showing that the main concentration of artifacts in Archaeological Level 1 is several cm above the surface of couche C; looking W.

Les Tambourets, 1980

a80083



a80084



a80085



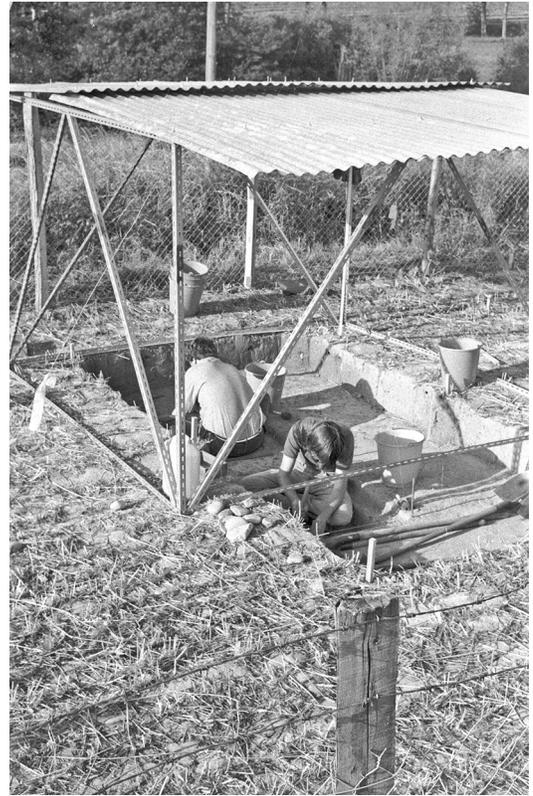
b800102



Les Tambourets, 1980

b800204

b800103



b800205



b800208



Les Tambourets, 1980

b800209



b800310

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b800310 12 Jul 1980 III-B(S) - Archaeological Level 1(0-5 cm), with pedestaled artifacts in place; photo from ladder, looking N.

b800312

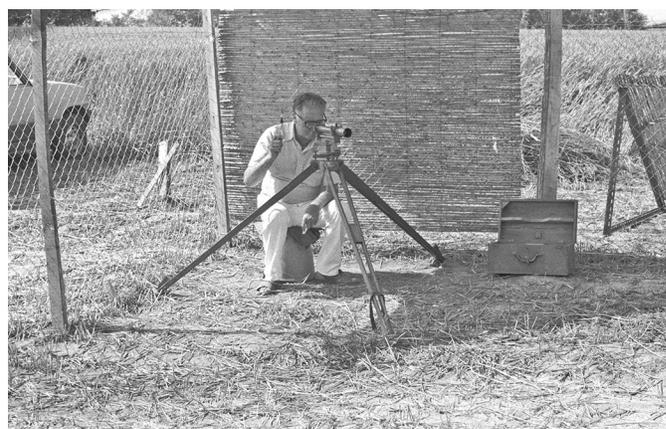
[return to monograph](#)



b800312 12 Jul 1980 III-B(S) - Harvey Bricker excavating Archaeological Level 1; looking SW. (Victoria Bricker photo)

b800314

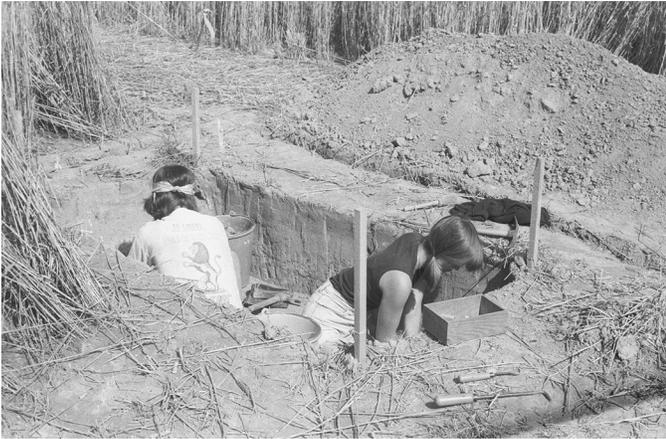
[return to monograph](#)



b800314 17 Jul 1980 Main Area. Arden King using the Wye level; looking NW.

Les Tambourets, 1980

b800416



b800418

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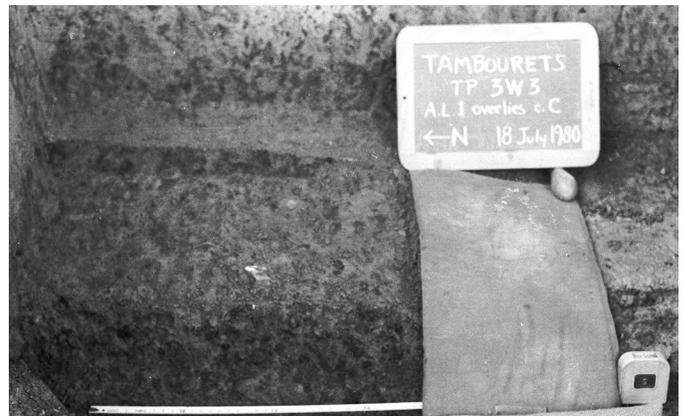
b800418 18 Jul 1980 III-A. Arden and Isabella King excavating couche B; looking S.

b800502



b800605

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b800605 18 Jul 1980 Test Pit 3W3. Stratigraphic block (close-up detail) showing that Archaeological Level 1 rests directly upon couche C; looking E. Low face is a cut through A. L. 1. Surface at base of low cut is surface of couche C, with A. L. 1 artifacts pedestaled in place. Vertical face in foreground is a cut through couche C(0-5 cm), with the horizontal tape at the base of this cut.

Les Tambourets, 1980

b800606

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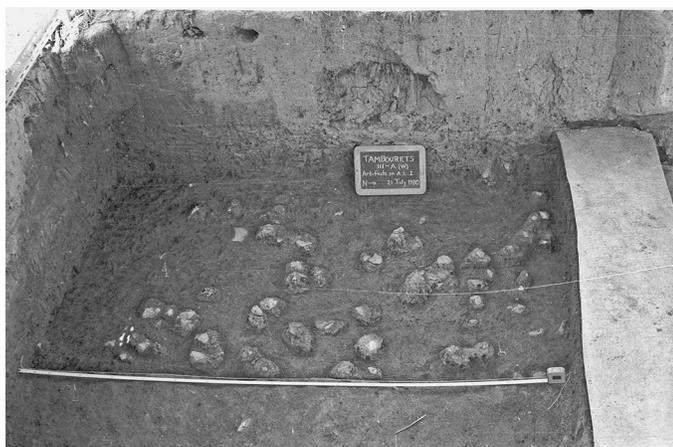


b800606 18 Jul 1980 Test Pit 3W3.  
Harvey Bricker making an entry in the  
photo log during the excavation of the test  
pit. (Victoria Bricker photo)

b800608



b800710



b800712



Les Tambourets, 1980

b800713

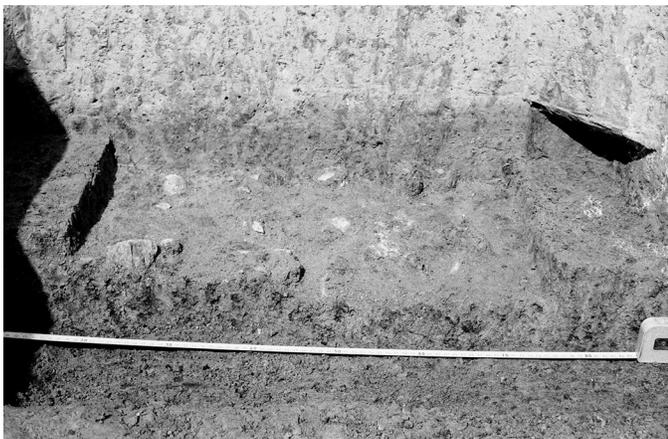


b800715



b801118

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b801118 24 Jul 1980 Test Pit 3W1. Stratigraphic block (close-up detail) showing that Archaeological Level 1 rests directly upon couche C; looking W. Small surface at left is the surface of A. L. 1. The larger surface below it is the surface of couche C, with pedes-taled A. L. 1 artifacts upon it. The tape rests on an arbitrary surface within couche C.

b801120

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b801120 24 Jul 1980 Test Pit 3W5. Measuring and recording the lateral coordinates of artifacts still *in situ*; looking NW.

Les Tambourets, 1980

b801236



b801302



b801303

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b801303 3 Aug 1980 Test Pit 3W5. Stratigraphic block showing that the main concentration of artifacts in Archaeological Level 1 is several cm above the surface of couche C; looking W.