PRELIMINARY REPORT on the research supported by NSF grant No. SOC75-11142 ("Archaeological and Paleoenvironmental Research at Les Tambourets, Southwestern France")

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I. Introduction

This preliminary report describes the field research activities carried out in the summer of 1975 at the prehistoric site of Les Tambourets (commune de Couladère, Haute-Garonne, France) as well as the laboratory preparations and preliminary analyses carried out between September 1975 and April 1976 at Tulane University and the University of Bordeaux I. As explained below, much of both the archaeological and the paleoenvironmental analysis is still in progress, and very few results can be specified in this report. A full report on the results of the research, accompanied by maps, artifact drawings, and photographs, will be submitted at the expiration of the grant period.

II. The Field Research Personnel

The field investigations were carried out in the summer of 1975 under the terms of Autorisation de Fouilles Archéologiques No. 0832, issued 20 March 1975 by the Service des Fouilles et Antiquités, Secrétariate d'Etat à la Culture. The archaeological aspects of the project were under my general direction (M. J.-F. Alaux was associated with the direction), and the geological aspects were directed by M. Henri Laville.

The 1975 excavation season at Les Tambourets extended from 10 June through 20 August, a period of 10 weeks. During this period, the following persons assisted with the excavation and laboratory tasks:

Victoria R. Bricker	Tulane University (Assoc. Prof. of Anthropology)	10 weeks
Jacqueline Brind	Newquay, England (amateur archaeologist)	2 weeks
Joe T. Cooper	Tulane University (Ph.D. student, ethnology)	10 weeks
A. P. Fowler	Sheffield, England (B.A. graduate in archaeology of the University of Sheffield)	10 weeks
John Fowler	Sheffield, England (amateur archaeologist)	2 weeks
Marco J. Giardino	Tulane University (Ph.D. student, archaeology)	5 weeks
Marla K. Hires	Tulane University (Ph.D. student, archaeology)	5 weeks
Barbara E. Holmes	Tulane University (Ph.D. student, ethnology)	10 weeks
Arden R. King	Tulane University (Professor of Anthropology)	3 weeks
Isabella E. King	New Orleans, Louisiana (amateur archaeologist)	3 weeks
Louise Lepie	Tulane University (Ph.D. student, ethnology and archaeology)	5 weeks
J. C. M. McNee	University of Sheffield (B.A. student, archaeology)	3 weeks

Paul Ossa	Skidmore College (Asst. Prof. of Anthropology)	1 week
Cliff Samson	University of Sheffield (B.A. student, archaeology)	5 weeks
Jeanne Trapolin	New Orleans, Louisiana (B.A. graduate in anthropology of University of New Orleans)	10 weeks

Mr. Alexander Marshack (Peabody Museum, Harvard University) spent one day at the site applying certain specialized photographic techniques to the solution of a stratigraphic problem; the results of these efforts are discussed in a later section of this report. Dr. David Lubbell, an archaeology professor at the University of Alberta, offered his time and the use of his surveying equipment for several days in order to help me prepare a rough base map of the hilltop on which the site is located.

M. Henri Laville spent several days at Les Tambourets in early August consulting with me about the general program of paleoenvironmental research and collecting samples for sedimentological and palynological analysis (discussed further in sections III and V, below). M. Jean Clottes, Directeur des Antiquités Préhistoriques de Midi-Pyrénées, made a visit of inspection to the site in August.

III. Description of Excavations and Stratigraphic Sequences

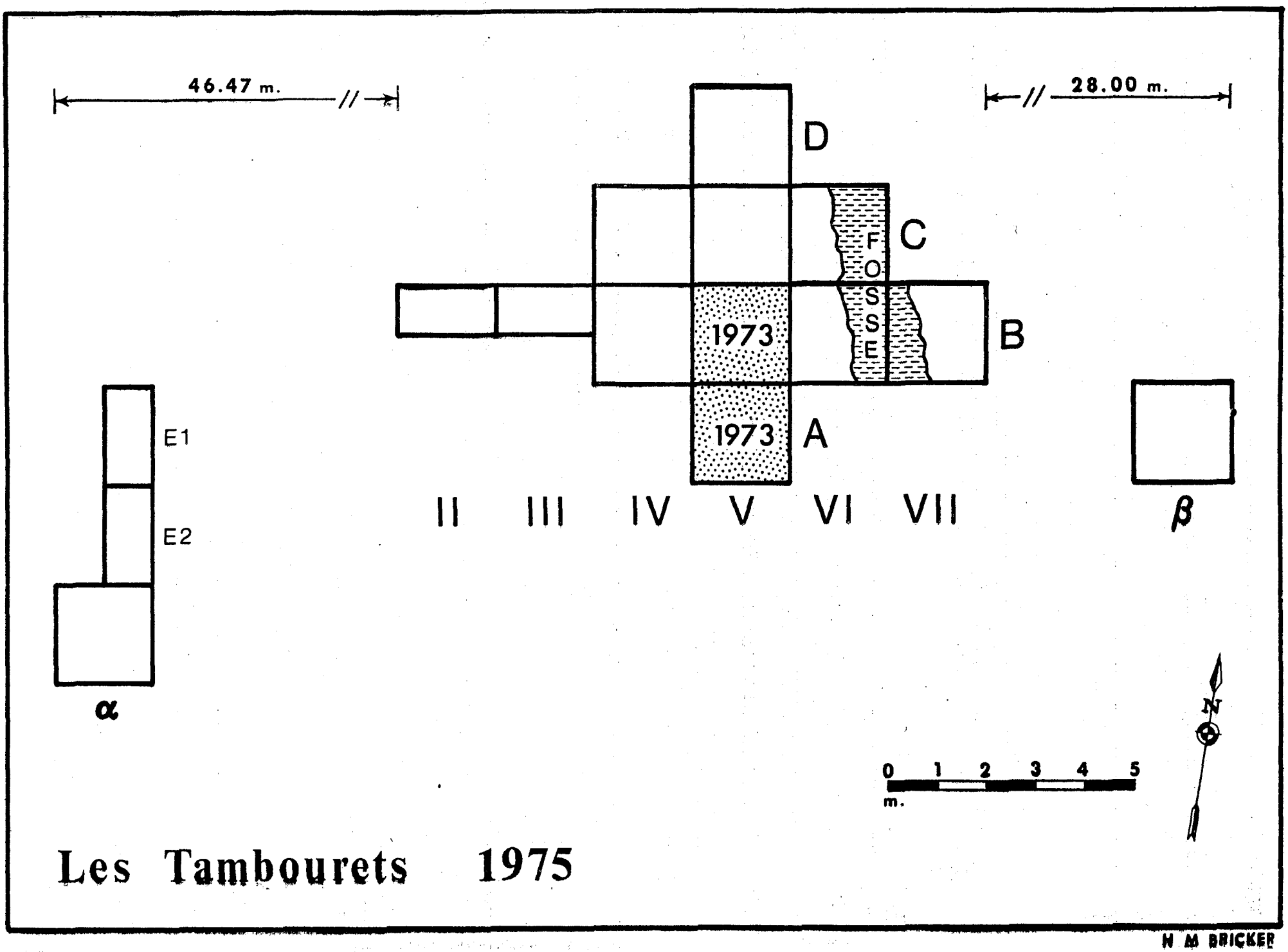
The first week of the season was devoted to the laying out of an excavation grid congruent with that established in 1973 and the construction of shelters and an enclosure. Two large metal-roofed shelters and one small portable shelter were constructed to protect

the excavators and the exposed archaeological level from sun and inclement weather. A fence (13 x 17 m.) and locked gate were installed around the main area of excavations. A total of 44 sq. m. was opened up, exposing 40 sq. m. of the archaeological level. At the end of the excavation season, on 21 August 1975, the main area of excavation was mechanically backfilled.

Excavation during the 1975 season took place on three places within the southern sector of the site, just to the north of Route D.62: a "Main Area" that represented an extension of the 1973 test excavation, a western test excavation (Test Pit Alpha with its Extensions 1 and 2), and an eastern test excavation (Test Pit Beta). The relative locations of these areas and the grid system used in the Main Area are shown in the figure. Squares A and B of the 1973 test excavation become V-A and V-B of the 1975 grid system.

A. The Main Area. The efforts of the 1975 season were concentrated on this area in an attempt a) to uncover more of the Châtelperronian living floor encountered in 1973, b) to enlarge the artifact sample of this occupation, and c) to learn more about the Pleistocene sediments lying below Archaeological Level 1 (the principal archaeological horizon).

The back-filled material was removed from a portion of square V-B (from which the archaeological level had been excavated in 1973), and a test pit was dug into the underlying deposits to a depth of 2.50 m. from the surface. This geological test pit provided an exposed face along the southwest corner of square V-C from which M. Laville took a series of continuous samples (42 samples, extending from the base of the plough zone to the bottom of the test pit). The strati-



Les Tambourets 1975

graphic succession in this part of the site is summarized below. Couches A, B, C, and D were encountered in 1973. Couches E through M were recognized in 1975, and it must be strongly emphasized that the descriptions appearing here are extremely tentative; the laboratory analysis of the sediments now being done may well change the descriptions materially and may even change the number of geological strata recognized.

Couche A. (30-40 cm) The plough zone.

Couche B. (25-50 cm) A silty-clayey sediment at the top, changing to a more clearly clayey silt toward the base. At the bottom (ca. the basal 10 cm), Couche B contains a very rich lithic industry; this is Archaeological Level 1.

Couche C. (ca. 40 cm) A silty-sandy clay that contains numerous indurated ferromanganese concretions of rusty or brown color.

Couche D. (ca. 60 cm) A silty-sandy clay, sticky and plastic when moist, variegated with bluish and rust-colored spots.

Couche E. (ca. 1 cm) A thin, undulating level of quartz gravel.

Couche F. (ca. 10 cm) A silty-clayey sediment with numerous ferromanganese concretions.

Couche G. (ca. 15 cm) A hydromorphized clayey silt with an appreciable sand fraction and numerous beds of quartz gravel and numerous ferromanganese concretions.

Couche H. (ca. 10 cm) A sediment of identical context with massive ferromanganese concretions but with apparently less gravel than in Couche G.

Couche I. (ca. 10 cm) Ferromanganese concretions are less numerous and more diffuse; much quartz gravel.

Couche J. (ca. 5 cm) Gravel is more rare than in Couche I.

Couche K. (ca. 5 cm) Gravel is once again more abundant.

Couche L. (ca. 5 cm) A true solifluction nappe formed of quartz gravel and small cobbles; very numerous ferromanganese concretions.

Couche M. (ca. 5 cm) Almost no more quartz gravel and almost no more ferromanganese concretions. As is true for the overlying levels, there are obvious manifestations of hydromorphy.

After the plough zone (Couche A) had been removed by pick and shovel, excavation in the Main Area was carried down through the upper 5 cm of Couche C. The upper and middle zones of Couche B produced occasional brick fragments, potsherds, and quartz cobbles (often burnt) and sporadic Palaeolithic stone artifacts, but there was no evidence of a true occupation level--Palaeolithic or later--above Archaeological Level 1. Couche C, sampled very minimally in 1973 and thought then to be sterile, produced small amounts of Châtelperronian material; it was possible to determine during excavation that most of these artifacts were in the filling of rodent burrows extending down from Archaeological Level 1. The results of back-plotting I have done during the winter months suggest that there is no true artifact horizon in Couche C. No artifacts of any kind were discovered in the geological test pit from levels below Couche C.

A large post-Palaeolithic ditch or gully (shown as "fosse" on the figure) was found in portions of squares VI-B, VI-C, and VII-B. This feature, trending roughly north-south, had been dug or was eroded into the upper zone of Couche C, and thus it had removed Archaeological Level 1. At the surface of Couche C, the ditch was 70-80 cm wide. Four

linear meters of the ditch were uncovered in the Main Area, and what appeared to be the same feature was seen on the cleaned section of the D.62 (Gensac) roadcut, ca. 8 m. south of the excavated portion. The bottom of the ditch slopes gently to the south, approximately conformably with the modern land surface.

The few artifacts contained in the fill of the ditch or gully included brick fragments, potsherds, quartz cobbles, and rare Palaeolithic stone artifacts. The ceramic materials, examined very briefly by M. Clottes during his inspection visit, indicate a historic age for the fill, but no further precision is possible at this time. Only at the base of the feature, where it cut into Couche C, were the ditch walls visible in section, and only there could they be followed in excavation. There was absolutely no visible difference between the upper part of the ditch fill and the *in situ* Couche B to the east and west of the fill. Infrared photographs taken by Mr. Alexander Marshack of the south wall of square VI-B show a vague difference between the ditch fill and the Couche B sediments. The infrared photographs might be interpreted as showing a very irregular, partially undercut, partially slumped western wall of the ditch, but this is far from certain.

Because the historic-age ditch or gully had removed ca. 4 square meters of Archaeological Level 1, I requested and received permission from M. Clottes to open an additional 4 square meters on the western edge of the Main Area.

The irregularities in the surface of Couche C mentioned in the preliminary report on the 1973 test excavation were found to be part of a larger area of topographic irregularity. Unfortunately, it has not been possible to see in this irregularity any pattern that would indicate

the presence of habitation structures. Furthermore, although small flecks of charcoal and pieces of burnt flint were again found in Archaeological Level 1, especially in the western part of the Main Area, no hearths or concentrated areas of charcoal scatter were encountered in 1975.

B. Test Pit Alpha. A small test excavation was made ca. 45 meters west of the Main Area just north of Gensac road (D.62). A test pit (Alpha) 2 m. x 2 m. was later extended to the north by a trench (Alpha Extension 1 and 2) 4 m. x 1 m. The extension was made, after discussion with M. Clottes, in order to investigate the moderate north-south slope (4.25 cm/meter) of the surface of a geologic unit considered likely to be the stratigraphic equivalent of Couche C in the Main Area. A stratigraphic column was left in the northwest corner of Test Pit Alpha, and from this column M. Laville removed a continuous series of 27 samples for sedimentological and palynological analysis.

The stratigraphic sequence in Test Pit Alpha differs somewhat from that found in the Main Area. Recognition of geologic units during excavation was rendered difficult by the slope of the deposits (significantly greater than that of the modern surface, but this was not known at the start of excavation) and by their visual homogeneity. The descriptions that follow are extremely tentative field characterizations, and M. Laville has emphasized their tentative nature by speaking of generalized sedimentary "ensembles" rather than geologic "couches."

Couche A. (30-40 cm) The plough zone.

Ensemble I. (ca. 65 cm) An only slightly clayey silt, hard when dry and of crumbly texture, containing some ferromanganese concretions.

Ensemble II. (ca. 15 cm) The archaeological level, occurring in a sediment perhaps richer in clay and containing some quartz gravel.

Ensemble III. (ca. 6 cm) The sediment between the archaeological level and the surface of Ensemble IV.

Ensemble IV. (ca. 20 cm) This ensemble is characterized principally by the presence of very numerous ferromanganese concretions and by a general induration of the sediment. The surface of Ensemble IV is sharp and undulating.

Ensemble V. (over 25 cm; base not reached by excavation) This ensemble was separated more-or-less arbitrarily from the one above on the basis of a lesser density of ferromanganese concretions, which, however, continue to occur sparsely down to the limit of excavation.

Starting in the lower part of Ensemble I, there are manifestations of hydromorphy that become more and more common with depth, down to the lower limit of excavation.

Some Palaeolithic stone artifacts are found sporadically throughout the sediments of Ensemble I, but the major concentration, varying in thickness from 5 to 15 cm, occurs lower down in what has tentatively been designated Ensemble II. Ensemble IV, the zone of numerous ferromanganese concretions, is thought by M. Laville to be the same stratigraphic unit (? fossil soil) as Couche C of the Main Area. It should be emphasized that whereas in the Main Area the artifact concentration of Archaeological Level 1 lies directly upon the surface of Couche C, in Test Pit Alpha (and Extensions 1 and 2) the concentration of archaeological materials is separated from the probable Couche C equivalent by a zone of virtually sterile sediment varying in thickness from 6 to

12 cm. The Palaeolithic artifacts from the Test Pit Alpha excavation are certainly to be assigned to the Châtelperronian tool-making tradition (they include Châtelperron points, characteristic flake scrapers, etc.), but it seems possible--indeed, likely--that they represent a different occupation from that present in the Main Area. Although this must be confirmed by the analysis of the coming months, it seemed during excavation that a somewhat different mix of flint varieties was present in the Alpha industry. The relative ages of the Alpha archaeological materials and those of the Main Area should be determinable from the sedimentological and palynological analysis. There may, however, be some problem about this; as explained below in section V, the sedimentological characteristics of Test Pit Alpha are apparently quite different from those of the Main Area.

C. Test Pit Beta. A second small test excavation was made ca. 30 meters east of the Main Area, again just north of the Gensac road (D.62). The 2 m. x 2 m. test pit (Beta) was located as far east as possible without entering the area where the archaeological level crops out at the modern surface. Along the northern edge of Test Pit Beta, the surface of the artifact scatter was less than 5 cm below the plough zone, and along the southern edge this distance was ca. 12 cm.

The stratigraphic succession revealed by the excavation of Test Pit Beta was adjudged by both the excavators and M. Laville to be essentially identical to that in the Main Area, extending from the base of Couche B (including Archaeological Level 1), through Couche C, and into Couche D. M. Laville did not consider it necessary to take sediment samples from Test Pit Beta, and the excavation was stopped before reaching the base of Couche D.

The small and sparsely scattered artifact sample from Test Pit Beta was concentrated in a zone lying directly upon the surface of Couche C. This fact plus the preliminary assessment of the artifact typology strongly suggests that Test Pit Beta sampled the same Châtelperronian occupation (probably near its eastern limit) as that encountered in the Main Area.

IV. Archaeological Materials

A total of 4307 objects recovered during the 1975 excavations were catalogued:

3678	flint artifacts
592	non-flint stone objects, of which most are unmodified or minimally modified pebbles and cobbles (manuports)
37	ceramic objects (potsherds, fragments of brick and tile)

The preponderant majority of the catalogued objects (n = 3618; 84.00%) came from the Main Area; 603 (14.00%) came from Test Pit Alpha plus Extensions 1 and 2, and 86 (2.00%) came from Test Pit Beta.

The flint industry, considered globally, was composed of 676 retouched tools (18.38% of all flint objects), 158 nuclei (4.30%) and 2844 débitage products (77.33%). The following list is a preliminary inventory of major tool classes:

Tool Class	n	%
Scrapers	117	17.31
Perforators	24	3.55
Combination tools	3	0.44

Tool Class	n	%
Burins	77	11.39
Backed tools	45	6.65
Marginally retouched blades	31	4.59
Truncated pieces	37	5.47
Splintered pieces	37	5.47
Notched and denticulate pieces	137	20.27
Misc. retouched pieces	138	20.41
Spalls	30	4.44
	676	99.99

The debitage products include 450 unretouched blades and 2394 unretouched flakes and chunks. Because the detailed typological and technological analyses are still in an early stage, it is not yet possible to document the kind of non-random lateral distribution of artifact classes that was present in the area of the 1973 test excavation. During the excavation, however, it seemed very likely that similar localization patterns existed in the part of the Main Area investigated in 1975.

With the authorization of M. Clottes, the Bureau de la Recherche Archéologique au Secrétariat à la Culture, and the Direction des Musées de France, the archaeological materials recovered during the 1975 excavations were brought temporarily to my laboratory at Tulane University for analysis. At the expiration of the study loan (a period not to exceed two years), all materials will be returned to the Depôt de Fouilles de la Circonscription des Antiquités Préhistoriques de Midi-Pyrénées in Toulouse.

V. Geological and Palynological Study After the Excavation

The sediment samples taken by M. Laville from the Main Area and from Test Pit Alpha have been mentioned above (section III). Although the full report on the analyses will not be available for several months, I have learned from M. Laville (letter of 14 January 1976) that the granulometric analysis of all samples had been completed and that additional analyses (heavy minerals, etc.) were then in progress. One of the most problematic results of the study of the 1973 sediment samples was the suspected presence of a minor break in sedimentation in upper Couche B, above Archaeological Level 1. Laville now reports that this depositionary hiatus has been confirmed by the 1975 samples, although its duration remains uncertain.

For the moment, the study of the Test Pit Alpha sediments has raised more questions than it has answered. Laville reported in his letter that "the sediment seems to be very homogeneous from top to bottom, and I do not find the variations that appear in the Main Area. I will have to carry my analysis further to elucidate this mystery."

One of the principal scientific benefits we expected to result from the Les Tambourets research program was the development, for the first time, of a geochronological sequence for the final Pleistocene of the central Pyrenean foothill region. It now appears that a far longer and much more valuable sequence may be produced by <u>combining</u> the results from Les Tambourets and those from the Lower and Middle Palaeolithic site of Mauran, ca. 20 km. from Les Tambourets. A major excavation at Mauran was begun in 1975 (after previous test excavations) by a French archaeologist, Mme. Girard, and the sediments and pollen are being studied by M. and Mme. Miskovsky from Paris. Although

information from both sites is very preliminary, it seems likely that the sequences from the two sites may overlap in the early Würm time period. If this would be true, the combined (and, I expect, collaborative) results of Laville and Miskovsky will produce a sequence extending from the Middle Pleistocene to the late Upper Pleistocene. This is one of the most exciting (and unanticipated) prospects coming out of the research program.

I have not yet received the preliminary results of the pollen analysis of the Tambourets sediments. This information will be included in the later report.

VI. Dating Possibilities

As noted above, the 1975 excavations at Les Tambourets did not produce any hearth fill or other burnt material suitable for radiocarbon dating. At the suggestion of M. Laville, several samples of burnt quartz, from Archaeological Level 1 and from higher up in Couche B, were sent to the Université de Bordeaux because of an experimental program being conducted there on the thermoluminescence dating of such materials. Unless this should prove efficacious, however, techniques of relative dating will continue to be the only ones applicable to Les Tambourets.

VII. Archaeological Research After the Excavation

During the months of September 1975 through April 1976, my work with the Tambourets materials has consisted primarily of four activities:

a) At the close of the field season, ca. 1500 artifacts had not yet been catalogued. I finished this job in the laboratory here at Tulane during the early fall.

b) Because of the visually undifferentiated characteristics of the Couche B. loess deposit and of most of the sediments of Test Pit Alpha, detailed vertical back-plotting of artifact location is generally helpful (and sometimes necessary to define the top of Archaeological Level 1). This work was especially necessary to provide archaeological information relevant to the depositionary hiatus in upper Couche B mentioned above. This work was done in the laboratory during the late fall and winter.

c) Much of my time during Tulane's winter recess was spent in darkroom work, printing the black-and-white photos of the site and preparing the components for photomosaics. Also, I did some preliminary preparation of maps and sections.

The report on the 1973 test excavation at Les Tambourets, co-authored by Henri Laville, has now been submitted for publication. A condensed English language version will be published in "Stone Age Technology and Culture" (a Festschrift for François Bordes), edited by A. K. Ghosh and J. Tixier. The complete report, in French, has been submitted to the Bulletin de la Société Préhistorique Française.

My teaching and other obligations to Tulane University will end for this academic year on 16 May 1976. I plan to spend the summer months working in my laboratory on the typological and technological analyses, artifact illustration, final drafting of maps, sections, etc., and the writing of the report on the archaeology.

It is my desire, contingent upon the results of the analyses in progress, to do two more seasons of excavation at Les Tambourets, during the summers of 1977 and 1978. These long-range plans, for which authorization and funding will be sought at the appropriate time, have been

discussed with MM Clotes and Laville and with the owner and cultivator of the property. The results of the 1975 field season, both archaeological and geological, point out the need to direct attention, through carefully chosen sampling strategies, to parts of the vast site other than the southern margin where my work has so far been concentrated. Although the intensive and extensive examination of one living floor (the Main Area) has produced valuable data, some additional excavation undertaken in conformity with a slightly modified overall research plan seems necessary in order to achieve the best results of archaeological and paleoenvironmental research at Les Tambourets.

VIII. Acknowledgments

Many people contributed very generously of their time, advice, and other resources in order to make this project possible. I gratefully acknowledge my indebtedness and gratitude to the following:

-- to all members of the excavation crew (mentioned above in section II), who worked hard and well for very long hours, for much of the time under extreme conditions of heat and drought.

-- to M. H. Laville, for his continuing invaluable assistance with the paleoenvironmental study and his general good humor and friendship.

-- to Professor H. Movius, for permitting me to use again much of the valuable excavation equipment belonging to the Harvard Dordogne Expedition or to him personally.

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-- to M. and Mme. P. Méroc, for their hospitality in Cazères, and for M. Méroc's continuing attempts to make available to me the results of his father's previous reserach at Les Tambourets.

-- to M. G. Manière, for his much appreciated aid and advice.

-- to Dr. Lubbell of the University of Alberta, for making available to me several days of his time and the use of his surveying equipment in order to facilitate a preliminary mapping of the site.

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-- to Mr. A. Marshack, for his willingness to apply his photographic expertise to one of our stratigraphic problems.

-- to Mme. Vadon of the Service des Fouilles et Antiquités and Mme. Blanchon of the Direction des Musees de France, for their special efforts to facilitate and expedite various matters necessary to my research.

-- to Mr. M. Giardino and Mr. R. Beavers, for their help in the laboratory and darkroom after the excavations.

I am particularly grateful to M. L. Sentenac and his family for their whole-hearted cooperation in finding ways in which their cultivation activities and our excavation activities could be carried out simultaneously in the same field. I am appreciative also of the material support they rendered on many occasions.

M. and Mme. Portet continued to make indispensible contributions to the research program. Without their offer of space, equipment, and materials for an on-site laboratory, the mundane problems of excavation and artifact processing would have been nearly insurmountable. I am very grateful to both of them for their help and interest.

The support and scientific advice of M. J. Clottes has continued to make possible the work at Les Tambourets, and I acknowledge with deep appreciation his sympathetic direction of my activities.

Once again, I offer my warmest thanks to M. Y. Dubois, to Mme. Dubois, and to their family for authorizing my work at Les Tambourets. Their many acts of kindness to me, to my wife and to all the members of the excavation crew were gratefully received as tokens of personal friendship that immeasurably enriched the conditions of scientific research.

Tulane University

New Orleans, Louisiana

4 May 1976