THE OPEN-AIR CHATELPERRONIAN SITE OF LES TAMBOURETS (commune de Couladère, Haute-Garonne, France)

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The prehistoric site of Les Tambourets (commune de Couladère, Haute-Garonne) covers much of the top of a low hill on the right bank of the Garonne River near its confluence with the Volp River. It was signalled as an open-air Châtelperronian site by Méroc (1953, 1963a, 1963b), who collected a large series of artifacts, mainly collected from the surface of the field. A small test excavation, under the joint direction of H. M. Bricker and J. F. Alaux, was carried out along the southern edge of the site during the summer of 1973. A preliminary study of the geological situation and the collection of sedimentological samples was done by H. Laville. This note is a preliminary report on the site, based on the results of the 1973 test excavation.

A. The Archaeology (HMB)

I. Stratigraphy.

The following stratigraphic sequence was noted in the test

excavation, an area 2 m. by 4 m. along the southern edge of the site:

Couche	Thickness	Description
A.	35-40 cm.	The plow zone.
B.	35-50 cm.	Dark brownish-gray silty-clayey sediment. Cultural materials, present throughout, are concentrated in the basal 10 cm.; this basal zone is Archaeological Level 1. Châtelperronian.
C.	ca. 25 cm.	Brownish-yellow clay containing numerous rust-colored ferromanganese concretions. Sterile.
D.	over 30 cm.	Variegated plastic clay (base not reached in excavation). Sterile.

II. The Industries.

A total of 687 artifacts were recovered from Archaeological Level 1; of these, 122 (17.76%) are retouched tools appearing in the type inventory (Table 1). Because of the very small area excavated and the lateral localization of tools on the living floor, the tool class frequencies and typological indices probably mean very little.

End-scrapers (Fig.1,Nos.753,483) are represented by 14 scraping edges, occurring on 10 single tools, 1 double, and 2 combination tools. The scraping edges are predominantly of arc-of-circle and irregular contour, medium angle, trapezoidal section, and non-convergent retouch pattern.[1] The majority of the blanks (mostly flakes) have irregular contours, and none is parallel-sided. The

TABLE 1.--Inventory of the Assemblage Sample from the 1973 Test Excavation at Les Tambourets, Sqs. A and B, Archaeological Level 1.

A. Inventoried Tools

Type		Total	%
1.	End-scraper	4	3.28
2.	Atypical end-scraper	4	3.28
3.	Double end-scraper	1	.82
4.	Ogival end-scraper	1	.82
5.	End-scraper on retouched blade or flake	1	.82
8.	Discoidal scraper	6	4.92
12.	Atypical carinate scraper	2	1.64
15.	Nucleiform scraper	1	.82
16.	Rabot or Plane	1	.82
17.	End-scraper + Burin	1	.82
18.	End-scraper + Truncated piece	1	.82
22.	Perforator + Burin	1	.82
24.	Bec or Atypical perforator	4	3.28
28.	Asymmetrical dihedral burin	10	8.20
29.	Transverse or transverse/oblique dihedral burin	15	12.30
30-A.	Burin on broken surface	3	2.46
30-B.	Burin on unretouched edge or end of flake or blade	3	2.46
35.	Burin on straight, oblique truncation	1	.82
41.	Mixed multiple burin, Types 27-30 + Types 34-39	1	.82
43.	Nucleiform burin	1	.82
44.	Flat-faced burin	1	.82
46.	Châtelperron point	3	2.46
47.	Atypical Châtelperron point	1	.82
57.	Shouldered piece	1	.82
58.	Completely backed blade	4	3.28
59.	Partially backed blade	3	2.46
61.	Piece with straight, oblique truncation	2	1.64
63.	Piece with convex truncation	3	2.46
65.	Piece with continuous retouch on one edge	6	4.92
66.	Piece with continuous retouch on both edges	3	2.46
74.	Notched piece	17	13.93
75.	Denticulate piece	5	4.10
76.	Splintered piece	5	4.10
88.	Denticulate bladelet	1	.82
89.	Notched bladelet	1	.82
92.	Other tools, not included in Types 1-91	4	3.28
		122	100.03

Table 1.--Continued.

Scraper index IG	16.39
Aurignacian scraper index IGa	1.64
Perforator index IP	3.28
Burin index IB	28.69
Dihedral burin index IBd	25.41
Truncation burin index IBt	1.64

B. Total Assemblage Sample

Inventoried tools		122
Miscellaneous retouched blades		7
Miscellaneous retouched flakes		12
Spalls		8
Nuclei		
Prismatic	20	
Tabular	2	
Flat	7	
Irregular	5	
Ebauche	1	
	35	35
Unretouched blades		100
Unretouched flakes		262
Unretouched chunks		96
Non-flint artifacts		4
Pigment ?		2
Broken river stones and ? manuports		39
		687

other scrapers (Fig.1,No.434), made on flakes, are a distinctive element in the assemblage. These scrapers, which merit a fuller description based on a larger sample, are unlike both the carinate scrapers of the Aurignacian and the larger, sharper coupoirs of the Middle and Upper Périgordian.

The burin sample (Fig.1,No.596) is composed of 33 single tools, 1 mixed burin, and 2 burins that are parts of combination tools; dihedral burin edges are heavily dominant (24 dihedral burins, 3 truncation burins, 4 break burins, and 4 burins on natural surfaces). The majority of the burin edges are located along the edge of the

blank ("lateral" position), and a general characteristic of the burin sample is the crudeness and irregularity of the flake blanks on which burins are made.

Four of the 12 backed tools are Châtelperron points (or knives)--1 complete example, 1 point, 1 segment (Fig.1,No.458), and 1 butt (Fig.1,No.746). The complete Châtelperron point is very small (17 x 7 x 4 mm.), but the fragmentary examples are larger, ranging in width from 12 to 16 mm. and in thickness from 3 to 10 mm. The other backed pieces in the sample may be broken or unfinished Châtelperron points, but this could be determined only by a study of the manufacturing process in a much larger sample. Three naturally backed knives occur in the sample. One is similar in shape to a large Châtelperron knife, and another (Fig.1,No.548) is a massive flake knife extensively utilized on the edge opposite the natural back. Although the back is not cortical, this piece conforms to the definition of a couteau à dos naturel given by Bordes (1961:33) and is morphologically similar to a Typical Mousterian piece illustrated by him (1961:Pl.37,No.13).

Truncated pieces are rare, and most marginally retouched pieces are fragments, possibly of other tools. There is, additionally, a series of small splintered pieces and a large inversely denticulated flake (Fig.1,No.510). The latter piece, unique in the sample, is somewhat similar to an inversely denticulated flake illustrated by Bordes (1961:Pl.40,No.2) from the Final Mousterian of Acheulian Tradition of Pech de l'Azé. It and the naturally backed flake knife mentioned above are the only two tools in the sample whose typological characteristics are strongly reminiscent

of the Mousterian.

The sample of nuclei is relatively large--34 from which blanks have been removed and 1 judged to be a "rough-out" (ébauche). All examples fall within the normal range of variation of Upper Palaeolithic blade cores (even though many of the last removals produced from these nuclei would not have had the length-width ratio--L $\geq$ 2W--taken as defining blades). The frequencies of unretouched blades, flakes, and chunks (débris) are given in Table 1. The relatively high proportion of chunks in the sample (ca. 20% of all products of débitage) is a result of the apparent use of some poor-quality flint that often shattered on being struck. Although no petrological examination has yet been made of the Tambourets flints and there have been as yet no extensive efforts to locate their sources, it is possible to state from preliminary observations that the major flint variety appearing in the flint industry is a smooth-textured, gray to honey-colored flint, of moderate to poor flaking quality, patinating to a bluish-white or white-and-tan state. Such flint can be found today on the surface at several localities in the valley of the Volp River to the south (upstream) of Les Tambourets.[2] The relationship between flint variety and artifact typology suggests that tools made of some or all of the minor varieties of flint, some of which appear to have significantly better flaking qualities, may have been brought to Les Tambourets (or at least to the area of the test excavation) in finished form rather than having been manufactured there.

III. Distribution.

Vertical distribution. A light scatter of artifacts (and

possible manuports) occurs above Archaeological Level 1, diminishing radidly in frequency toward the top of Couche B. Some degree of minor disturbance of Archaeological Level 1 by burrowing animals and possibly ancient root channels is present, and the artifacts in question are best explained as the vertical scatter resulting from such disturbance. The test excavation revealed no definitely in situ archaeological materials above or below Archaeological Level 1.

Lateral distribution. Although artifacts appear to be densely distributed throughout the whole excavated area of the living floor, except perhaps along the northern margin, this general distribution pattern is in fact non-random (Chi-square test using 1 m^2 sampling units, $P < .005$), with the greatest frequencies found in the western half.[3] The distributions of specific artifact classes appear to have their own localization patterns, different from that of the general distribution. Burins, nuclei, and utilized flakes are significantly associated with the southern zone of the test area (approximated by Square A), whereas scrapers and unutilized flakes are associated with the northern zone (approximated by Square B) (Chi-square test using 4 m^2 sampling units, $P < .005$). Nuclei and burins are more strongly localized than the other artifact classes; they alone retain a non-random patterning when the area of the sampling unit is reduced from 4 m^2 to 1 m^2 (burins, $P < .005$; nuclei, $.025 > P > .01$; scrapers, $.25 > P > .10$; utilized flakes, $.25 > P > .10$). The non-random patternings of burins and nuclei are independent of that of the general artifact distribution; these two tool classes are truly localized on the living

floor.[4] The small area of the living floor sampled in the 1973 test excavation does not permit the documentation of more general conclusions; data from subsequent excavations will supplement the preliminary observations discussed here.

B. The Sediments (HL)

The Palaeolithic site of Les Tambourets belongs to a vast complex of Quaternary deposits that outcrop at several points in the commune of Couladère (Haute-Garonne) in the vicinity of the confluence of the Garonne and the Volp. We will, nevertheless, limit our discussion to the preliminary stratigraphic and sedimentological observations made during the test excavation carried out by H. M. Bricker in July 1973. It was agreed, as a first step, to use the sedimentology to check on the stratigraphic divisions recognized during the course of the excavations and to obtain some information about the nature and origin of the deposits.

I. Stratigraphic Observations.

The Quaternary formations encountered during the 1973 excavations extend to a depth of about 1.35 meters below the surface. They are predominantly silty and clayey deposits. Four geological strata (couches) have been identified; the second contains at its base a clearly defined archaeological level containing a Lower Périgordian industry with Châtelperron points.

Couche A. Its thickness varies from 35 to 40 cm. It corresponds to a zone disturbed by plowing. The sediment is a clayey-sandy silt of dark brownish-yellow color (F63 to F64)[5]; the consistency

is friable, and the structure is granular to finely clumped. One notes throughout the thickness of the couche the presence of rare pebbles, of worked flint, of rare potsherds, and of modern objects. The lower limit of the couche is distinct and slightly undulating.

Couche B. As a result of the leveling of the modern surface by plowing and of the dip of Couche B toward the south, the thickness of Couche B varies considerably from one part of the site to another. It reaches 50 cm. in the southern part of the excavated area but only 35 cm. in the northern part; it outcrops at the surface 15 m. uphill to the north, and this explains the presence of worked flint objects in the plow zone, Couche A.

Couche B is a silty-clayey sediment at the top, passing to a more clayey silt at the base. Its color is dark brownish-gray (E61 to F61). It is still friable in its upper 15 cm., but it becomes firmer toward the base as the structure becomes more clearly angular. One notes here, especially in the lower part of the couche, the presence of some small ferromanganese concretions.

This deposit contains worked flint objects throughout its thickness; they are most clearly localized in the basal 10 cm., where they form a dense archaeological layer. The lower limit of the couche is sharp, and it has topographic irregularities that are either the result of frost action or the traces of ancient root systems.

Couche C. Its mean thickness is approximately 25 cm. It is a silty-sandy clay of brownish-yellow color. It has a firm consistency, slightly plastic, breaking apart into angular to polyhedric structural elements that have blackish pellicular coatings on their

surface. The sediment contains rust-colored or brown indurated concretions; they are like those at the base of Couche B but much more numerous. The lower limit is distinct and regular.

Couche D. We know about only the first 30 cm. At this level, the sediment is a silty-sandy clay that, when humid, has the properties of sticky plastic clay. The sediment, of generally brownish-yellow color, is variegated with rust-colored and bluish spots, and it contains numerous ferromanganese concretions, which are probably manifestations of hydromorphy.

II. Sedimentological Observations.

During the course of the excavations, we took 19 samples for sedimentological analysis. For the moment, two series of analyses have been done:

- Granulometry of the fractions between 2 mm. and 0.050 mm. in diameter
- Densitometry of the sediment less than 0.050 mm. in diameter

Examination of the two granulometric diagrams summarizing a) the distribution in the sediments of sands (2 mm. to 0.050 mm.), silts (0.050 mm. to 0.002 mm.), and colloidal minerals (clays) (Fig.2A), and b) the proportion of silts in the stratigraphic sequence (Fig. 2B) leads to the following observations.

The proportion of sands varies from 20 to 25%. It should be noted that although they are almost exclusively quartz grains in the upper two-thirds of Couche B, the sand fraction in the rest of the sequence is artificially enriched with fragments of the ferromanganese concretions; such debris accounts for almost the entire sand fraction in Couche D.[6] One concludes from this that the

sedimentary material of these deposits had originally a less coarse texture, and this is confirmed by the clearly clayey properties exhibited by Couche D while *in situ*.

In light of these observations, the granulometric differences that one sees among the different samples of Couche B have to do essentially with the relative proportions of silts to clays.

A sudden change appears at a depth of 135 cm. (sample B5), separating two different sets of sediments. The first, corresponding to the upper 15 cm. of the Couche B deposit, contains a predominant proportion of clays (28 to 30%), with the sandy fraction remaining nearly constant. The second set of sediments includes the lower deposits of Couche B (135 to 163 cm.), in which the proportion of silts, although still predominant, decreases progressively toward the base of the couche; this change is compensated for by a concomitant augmentation of clays. Although it is not possible to state a priori that this is a manifestation of leaching (*lessivage*), the progressive increase in the clay content of the sediment should be considered in relation to the modifications in the structure of the sediment that we have noted at the same stratigraphic level--a change from clumped to become really angular at the base of the couche.

Beginning at the very top of Couche C there is a slight increase in the proportion of sands matched by an equivalent decrease in the proportion of clays. One cannot use the presence of ferromanganese concretion fragments alone to explain the changed texture of the sediments, because the samples from the base of Couche B and from the entire thickness of Couche C contain an equivalent proportion

of those elements. This change in the granulometric composition of the deposit coincides with a major stratigraphic continuity; the first archaeological remains contained in Couche B rest directly on the top of Couche C.

The proportion of sands to silts to clays appears to be more or less constant in the samples coming from the remainder of Couche C and the upper part of Couche D. It should be remembered, however, that the analysis does not take into account the exact texture of the sediment of these deposits, because the sandy fraction is here enriched by ferromanganese concretion fragments. The texture of the sediment of these levels is, therefore, certainly much finer, particularly in Couche D, which we have described as made up of an essentially clayey-silty material.

Some considerations about the processes of emplacement of the deposits are suggested by an examination of the granulometric diagrams (Fig.2) and the cumulative curves (Fig.3).

No well-marked discontinuity appears in the cumulative curves between the sandy fraction and the silty fraction (Fig.3). These two components thus have a common origin. Taking into account the very high proportion of silts, we have to do here quite certainly with the results of aeolian action.

The very high clay content that characterizes the top of Couche D and that could have favored the hydromorphic phenomena that one finds particularly in that level probably have a different origin; it could be a product of the redeposition of more clayey formations by solifluction at the time of sporadic or seasonal thaws within a time of cold.

III. Discussion.

Although they are very limited, the first sedimentological analyses, which we wanted to carry out (at the request of H. M. Bricker) before the excavations were continued at the site of Les Tambourets, have already furnished useful information about the stratigraphy and the nature and origin of the deposits.

We have, indeed, been able to confirm that the three stratigraphic units distinguished during the course of the excavation (Couches D, C, and B) have textural properties contrasting sufficiently to characterize different phases of sedimentation, of aeolian origin, in a typically periglacial context.

One problem remains concerning Couche B. It was described during the excavation as a single sedimentary unit, but the granuometric analysis permits it to be interpreted as made up of two superposed deposits. The textural differences that we have discovered within this couche could be considered as the result of two separate stages of deposition--separated, apparently, by a episode of leaching (<u>lessivage</u>). If this interpretation should be verified, it could then relate to a minor stratigraphic disconformity that the excess dryness of the deposits prevented us from identifying during the excavation (it was not possible for us to check on this later because the trench in which we made our observations was backfilled at the end of the excavation season). This is a point that must be elucidated, as a matter of priority, at the beginning of the next excavation season.

C. Dating and Comparison (HMB and HL)

The 1973 test excavation at Les Tambourets demonstrated the presence *in situ* of an occupation level rich in artifacts that should be assigned to the Châtelperronian (Lower Périgordian) tool-making tradition. The small area excavated and the non-random distribution of various artifact classes mean that the observed tool-class frequencies are almost certainly not representative of the assemblage present on the entire living floor. Until a larger sample of the industry has been obtained, it is not useful to engage in detailed comparisons with Châtelperronian assemblages from other sites in France and Spain. The importance of prismatic blade cores and the very low frequency of characteristic Mousterian tools are, however, two features of the industry that are apparent in even a preliminary view.

We still lack information to date the Les Tambourets deposits with precision. Nevertheless, by referring to what we know about the chronological position of the Lower Périgordian with Châtelperron points in other parts of the Southwest of France (Chauchat and Thibault 1968; Gaussen and Texier 1974; Laville 1969, 1973), we can reasonably attribute Couche B and the archaeological remains it contains to the first moments of the Würm III.

NOTES

1. The attribute system referred to here is explained in Movius et al. (1968).

2. I am indebted to Dr. Phillippe Thomat for showing me these localities.

3. The test for random pattern employed was the variance mean ratio test (Dacey 1973). I am indebted to Mr. S. Richards of Tulane University for suggesting to me the use of this test.

4. The two tests for the absence of spatial association discussed by Dacey (1973) were used here.

5. Expolar code of Cailleux and Taylor for humid sediment.

6. It is likely that these fragments result from the crumbling of the larger ferromanganese concretions in the deposit during the removal of the samples or during their preparation.

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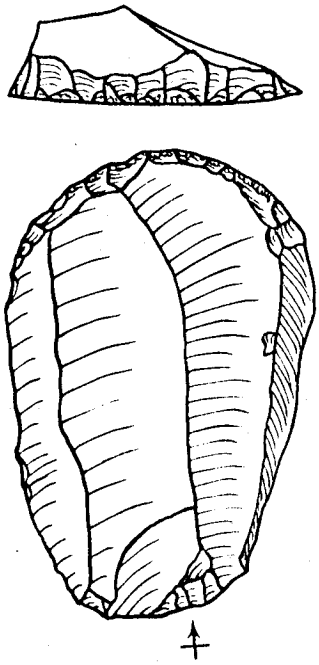
FIGURE CAPTIONS

FIGURE 1.--Les Tambourets: 1. End-scrapers: 753, 483. Flake scraper: 434. Dihedral burin: 596. Naturally backed knife: 548. Châtelperron points: 746, 458. Denticulate flake: 510.

FIGURE 2.--Les Tambourets. Granulometry of the Sediment Less Than 2 mm. in Diameter; Depth of Sample Shown in Centimeters Below Site Zero. Fig. 2A--Stratigraphic Diagram. Dots: sands (2 mm. - 0.050 mm.); vertical lines: silts (0.050 mm. - 0.002 mm.); horizontal lines: clays (less than 0.002 mm.). Fig. 2B--Variations in the Proportion of Silts.

FIGURE 3.--Les Tambourets. Granulometry of the Sediment Less Than 2 mm. in Diameter; Cumulative Curves. Solid line: Sample B1. Broken line: Sample D1.



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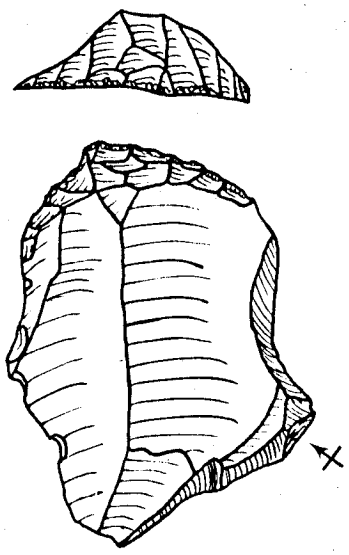

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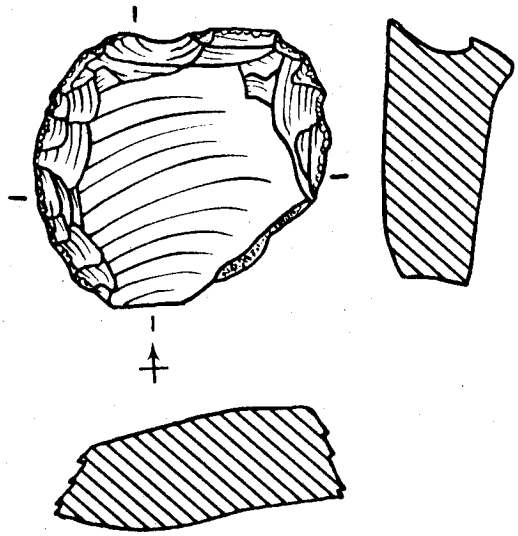

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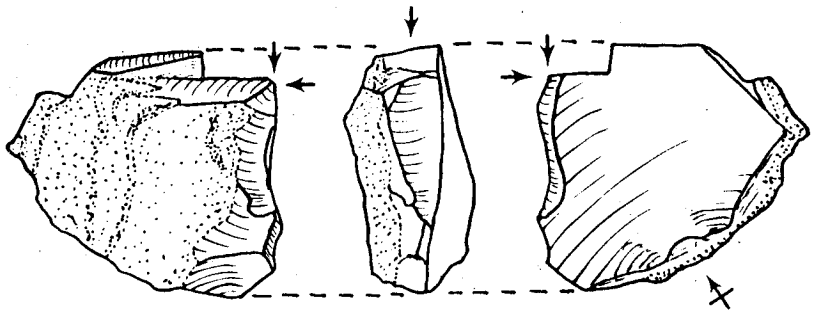

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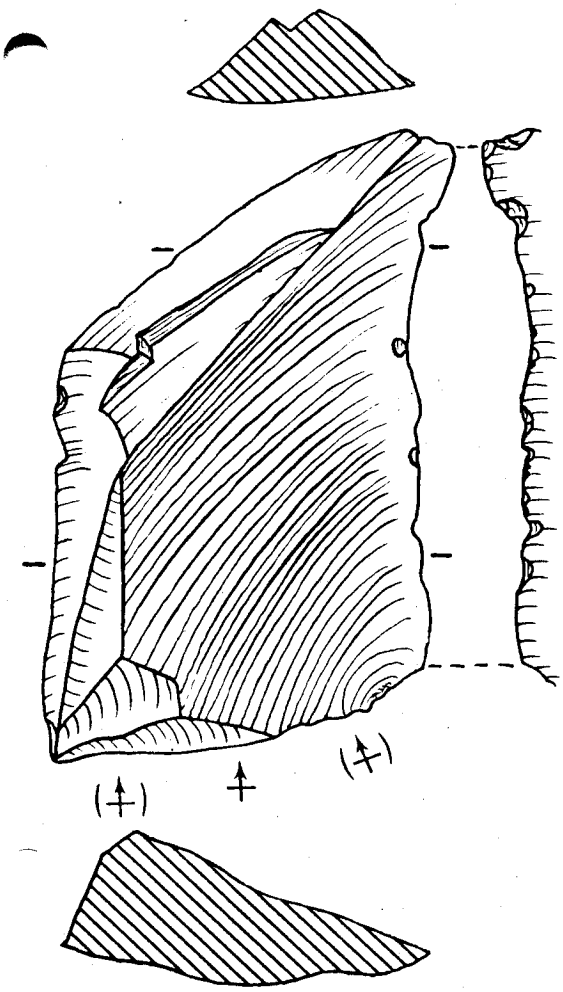

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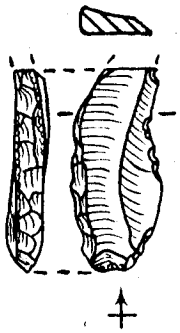

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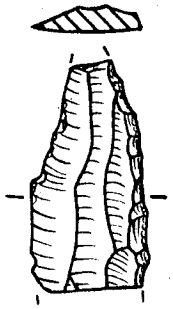

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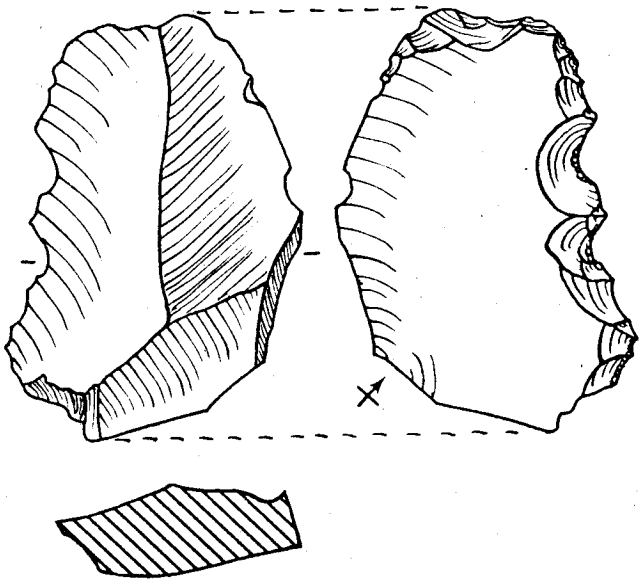

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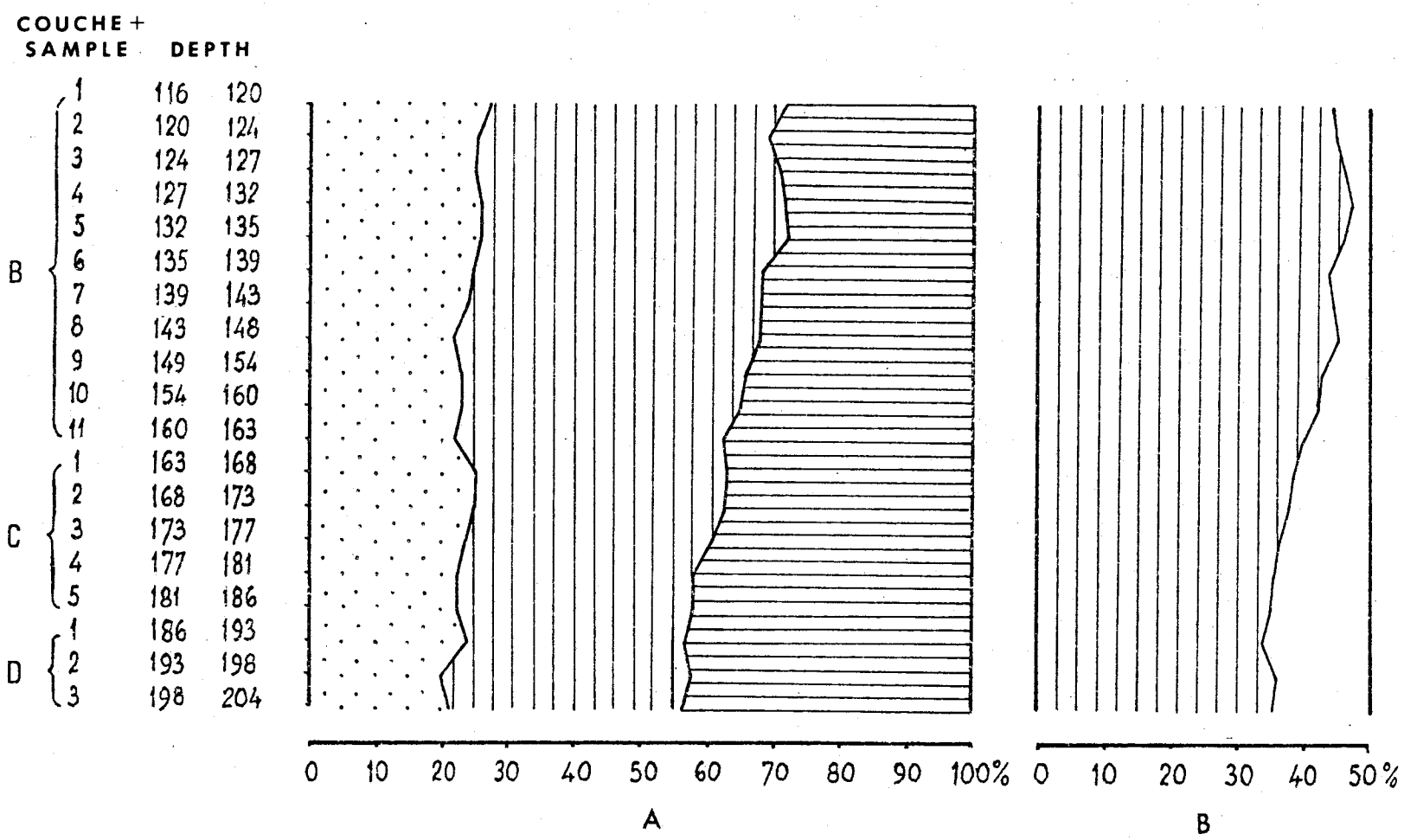
COUCHE + SAMPLE
DEPTH
B
1 116 120
2 120 124
3 124 127
4 127 132
5 132 135
6 135 139
7 139 143
8 143 148
9 149 154
10 154 160
11 160 163
C
1 163 168
2 168 173
3 173 177
4 177 181
5 181 186
D
1 186 193
2 193 198
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0 10 20 30 40 50%
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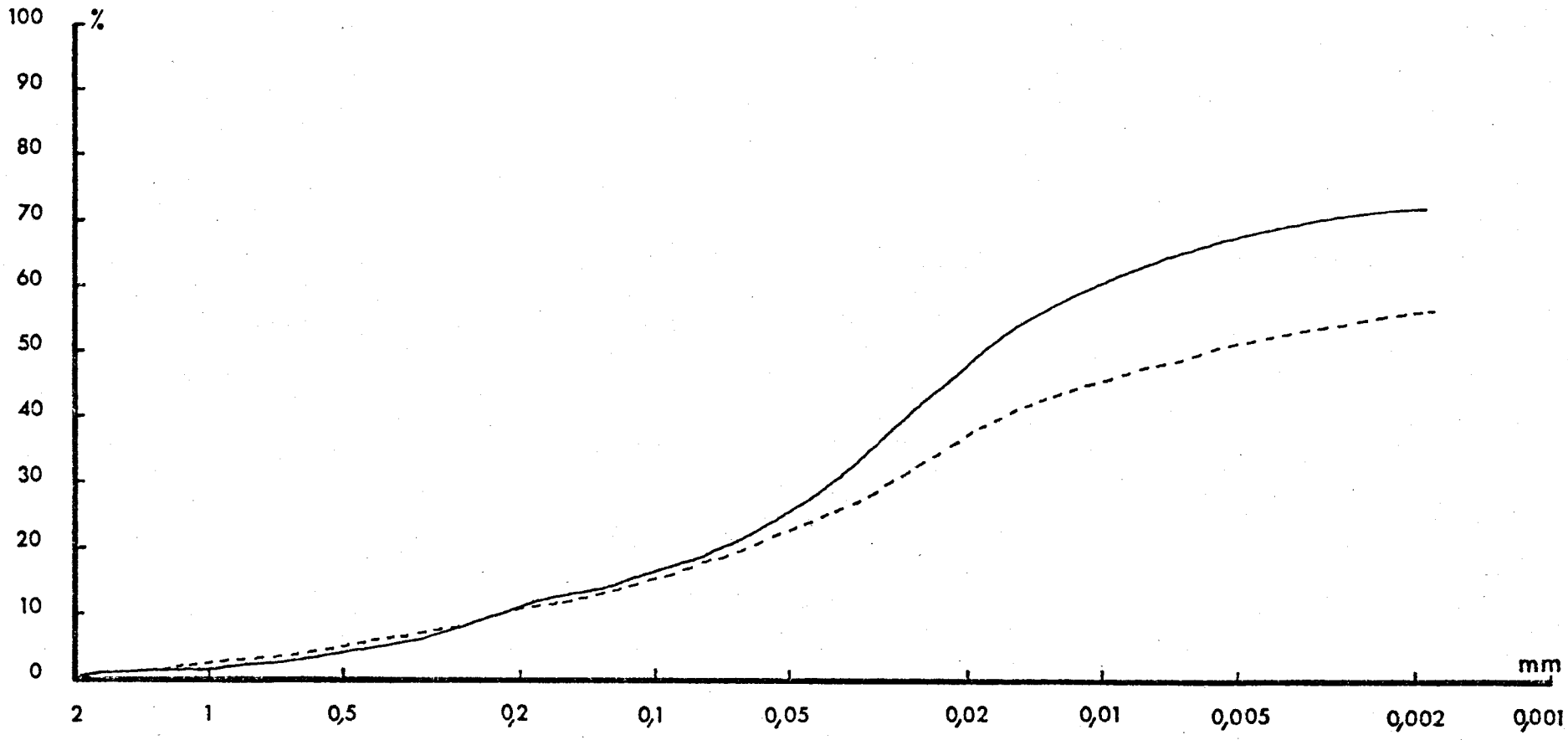
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